

DEVELOPMENTAL ASPECTS OF COMMUNICATION IN CHILDREN WITH DOWN'S SYNDROME

Susan M. Krasner

A Thesis Submitted for the Degree of PhD
at the
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A thesis submitted for the degree of Doctor of Philosophy,
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DECLARATION

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Dr A. Whiten (Supervisor)

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To my Parents.

"It certainly was a VERY large Gnat: 'about the size of a chicken,' Alice thought. Still, she couldn't feel nervous with it, after they had been talking together so long.

'- then you don't like ALL insects?' the Gnat went on, as quietly as if nothing had happened.

'I like them when they can talk,' Alice said. 'None of them even talk, where I come from'".

Lewis Carroll: "Through the Looking Glass"

"You taught me language; and my profit on't
Is, I know how to curse . . ."

William Shakespeare: "The Tempest"

ABSTRACT

This thesis presents a series of investigations into communicative interaction between mothers and their preschool children with Down's Syndrome (DS), and mothers and their infants with DS. Reference to the literature in this area indicates that there is a need to determine not only how the DS child and/or her/his mother differ from their nonhandicapped peers but also ways in which DS children's language can be accelerated.

Insofar as the preschool child with DS is concerned, a series of four studies are presented. The first of these investigates the effect of the label "DS" upon the mothers' perceptions of children thus labelled. Using videotapes of nonhandicapped, above average infants, it is demonstrated that some of the mothers' ratings of children are negatively affected if the child is described as having "DS". This is found to occur to a significant degree in both mothers of DS children and mothers of nonhandicapped children, although the effect is not identical in both groups across all the ratings measured.

To investigate whether any such negative distortions, or "labelling effects" would affect the interactive behaviour of mothers of DS children, a sample of mothers of DS children was videotaped, with each mother in turn playing separately with 2 sisters. These girls were four years old, nonhandicapped, non-identical twins. For the purposes of this experiment, one of the twins (the more developmentally advanced and the physically larger of the 2) was always described to the mothers as having DS, her sister always being described as nonhandicapped (i.e. the child least like a DS child - if either could possibly be thought of in

that way - was described as having DS).

It was found that all but one mother believed the experimental manipulation of the label; videotape analyses revealed furthermore that mothers treated the sisters significantly differently. Specifically the supposed DS child was ignored more often than her sister with mothers not responding to her attempts to initiate interaction and thus giving her less opportunity to control or direct the interactions. Mothers also used different types of interrogatives with her, avoiding the use of those questions which required more complex answers (wh- type questions) and using overall far more questions requiring only a simple yes/no response.

Moreover, audiorecorded interviews with the subjects in this experiment revealed them to be explaining and describing the supposed DS child's behaviour in a very negative way, interpreting her behaviour and speech on the basis of her diagnostic label, giving her little or no credit for any achievements. These results are discussed with reference to the literature on mother and DS child interaction, expectancy effects, and with reference to social psychological studies of stereotyping.

In addition to this possible contribution of a negative expectancy effect to the mother and DS child interactive relationship, the third study presented here illustrates problems that the DS child herself contributes to this interactive relationship. A sample of preschool DS children (the daughters of the subjects used in the previous studies), were assessed using a replication of the methodology used in Goldin-Meadow, Seligman and Gelman's (1976) investigation of nonhandicapped preschoolers receptive and productive speech. It was found that whilst DS

children's productive and receptive vocabularies for both nouns and verbs appear to develop in relation to one another in much the same way as that observed in nonhandicapped preschoolers, other aspects of their speech, namely their mean length of utterance and speech frequency, show an asynchrony that is not observed in the nonhandicapped language learning child. These findings are discussed with reference to the use of the much used measure of mean length of utterance (MLU) to assess DS children's language level and/or to equate it with that of "normal" children, and also with reference to the delay-difference debate.

The mothers and DS children involved in these studies were then videorecorded in their own homes in unstructured play situations and analyses of maternal communicative behaviours were conducted. It was found that mothers' interactive styles could be categorised on the basis of how directive of the interaction they were found to be. Specifically, the mothers in the sample were found to be either "questioning" or "commanding". "Questioning" mothers are so described because of their frequent use of interrogatives and little use of commands, whilst the reverse characterised the speech of mothers described as "commanding". In other words, whilst all mothers maintained high degrees of control, or direction, over the interaction sequences, some mothers did so in a way that encouraged at least some degree of linguistic participation by their children and avoided an overt dictatorial style (the questioning mothers), whilst the others gave their children little opportunity to participate linguistically in the interactions (the commanding mothers). Moreover, it was found that there was a significant negative correlation between maternal use of

commands and children's communicative ability. This is discussed in relation to a self-fulfilling prophecy, with particular reference to relationships which the evidence presented suggest exist between maternal speech style, mothers' susceptibility to negative expectancies (as demonstrated by the first 2 studies described) and children's language development (as assessed both by the third study described and by assessments made with the Bayley Scales of Infant Development [Bayley, 1969]).

In order to investigate the roots of this interactional picture, a longitudinal study was conducted over the first 6 months of life of a small sample of DS infants and their mothers. Throughout the first half of their first year, the DS infants, and matched nonhandicapped control infants, were assessed using the BSID (Bayley Scales of Infant Development). Videotape recordings were also made throughout the 6 months, of the mothers and infants within their own homes, and mothers' ratings of DS infants were measured using the same methodology to that described for the first experimental study conducted with the mothers of the preschool DS children. A regular diary noting mothers' comments about, attitudes to and feelings for their infants was also kept by the Experimenter after every visit to each infant's home. It was found that whilst the DS infants showed significantly lower BSID scores throughout the study period than did the nonhandicapped infants, these often did not drop outside of the "normal" range and were on occasions average or even above average. Moreover, the mother-DS infant videotapes, when analysed, revealed no indications of the later found preschool idiosyncracies of communication and indeed, did not differ significantly from those of the mother-nonhandicapped infant dyads,

although there was a non-significant tendency for the DS infants to exhibit fewer complex and more simple communicative behaviours than the nonhandicapped infants and for the mothers of the former group to exert slightly but non-significantly more control over interaction than did mothers of the nonhandicapped infants. Mothers' ratings of the DS labelled infant were not found to be negatively distorted, and this effect was similar in both mothers of the DS and nonhandicapped infants. This finding is contrasted with the results of this same study when conducted with mothers of preschool DS and nonhandicapped children and discussed with reference to the diaries kept for all the infants and to the relevant literature in this area.

Overall conclusions from these studies are drawn and proposals made for future research.

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PREFACE

In 1866, Langdon Down first described the condition which he termed mongolism, now more commonly known as Down's Syndrome (DS). More than 100 years later, advances in medical practice have not produced a "cure" for DS. Available treatments for conditions such as congenital heart disease which are particularly associated with DS, (Kirman, 1983) have resulted in significant improvements in the previously very high DS infant and childhood mortality rates (Carr, 1975), an increase in the life expectancy of DS persons with over 20 per cent now living beyond 50 years of age (Thase, 1982) and thus an overall increase in the prevalence of DS. In Scotland alone, where this present study was conducted, a recent survey has estimated that there are over 1,250 DS persons, the vast majority of whom are living with relatives, rather than in institutions (Murdoch, 1982).

If notions of "community care" (D.H.S.S., 1980) and "educational mainstreaming" (Warnock, 1978) are to be paid more than scant lip service, insofar as this growing population of DS persons is concerned, then it is essential that we increase our understanding of DS persons', and particularly DS children's, educational, social and psychological needs, enabling the design and implementation of effective intervention programmes in all aspects and at all levels of the DS individual's environment or "ecological system" (Bronfenbrenner, 1977). Whilst economic considerations should carry no weight in such matters, given current governmental priorities, it should perhaps be noted that arguably much of the £11.2 million per annum which is the estimated cost to society of the DS population in Scotland (Murdoch, 1982) and which includes the cost of special education, permanent care and the inability of DS

persons to work, could be negated by effective intervention which would result in many DS children attending normal schools (Ludlow and Allen, 1979), achieving independent or semi-independent living (Cunningham, 1982) and being potentially employable in the "normal" workplace.

Whilst acknowledging the policultural reforms needed (at least insofar as the determination of economic priorities is concerned) if any intervention is to be wholeheartedly applied, this thesis is an attempt to outline some of the problems in DS children's communicative development, in the belief that effective language intervention must be a priority if DS persons are to be helped to fill their rightful place in the community.

CHAPTER ONE

INTRODUCTION AND REVIEW OF THE LITERATURE

Down's Syndrome and its effects on the Mother-Infant Communicative Relationship

Over the last decade or so, throughout both Britain and the U.S., there has been a wealth of various intervention and educational programmes designed to enhance, hasten and correct the development of mentally handicapped children (e.g. Bricker and Bricker, 1973; Cunningham, 1983; Hanson, 1982). Insofar as children with Down's Syndrome (DS) are concerned, these have been of some success (e.g. The Hester Adrian Research Centre Infant Project; Cunningham, 1983) although in the area of language development, progress has been, and continues to be, very slow. As Cunningham (1982) illustrates in "Down's Syndrome. An Introduction for Parents", DS children generally reach the first word stage between 13 and 36 months (as opposed to 10 to 23 months where nonhandicapped development is concerned), and they may not reach the 2-word stage until over 5 years, (although the average is 30 months). He summarises the problem:

" . . . many children with Down's Syndrome, even given a high quality of teaching, appear to have great difficulty with the comprehension of language and with expressing themselves." (p. 165).

The aim here is to more fully examine this problem, and it is firstly proposed therefore to review the literature which illustrates and analyses these communicative difficulties.

1.1 The First 18 Months of Life: Focus on the Infant

Evidence from research into nonhandicapped development as to

the importance of the earliest communicative behaviours as precursors to later more complex interactive activities (e.g. Stern, 1977; Klaus and Kennell, 1976), has led several researchers to look towards the first year or so of a DS infant's life for clues towards or early manifestations of later difficulties in language skills. Much evidence in this area comes from Berger and Cunningham's recent studies. Considering eye contact to be one of the earliest and most important infant communicative behaviours, for example, they compared Down's infants and matched "normal" (i.e. nonhandicapped) infants over the first year of life (Berger and Cunningham, 1981a). Over the first 2 months the DS infants manifest a chronological delay in the onset of eye contact peaks and they also showed much shorter gaze durations than did the "normal" controls. However, as the infants got older, the handicapped babies exhibited greatly prolonged periods of high values for both the measures of the percentage of observation time spent in eye contact and also for the mean bout durations of eye contact episodes. Berger and Cunningham propose that the initial delay in the handicapped infants' use of prolonged eye contact and the difficulties they seemed to experience in maintaining long gazes could be due to their visual systems being immature in the very early months and thus inefficient - a problem which could also be exacerbated by specific pathologies, such as hypotonia in the muscles of the eye. (It should be noted however that despite the researchers adjusting the scores to compensate for differences between their DS and "normal" infants in gestational age even in their earliest sets of observations, the DS infants are retarded on average by almost a week). By about 3 months, the DS infants are exhibiting the aforementioned prolonged periods of eye

contact - evidence, Berger and Cunningham argue, for their now matured visual systems. However, the fact that by the fourth month they are still showing long eye contacts and high percentage eye contact levels, the researchers view as indicative of an impairment of information processing capacity. Indeed, these infants continued to exhibit long eye contacts and high percentage eye contact levels to the end of the study, whilst Spritzer-Griffith (1975) showed these abnormally high levels of mother-infant mutual visual regard being maintained in DS infants as late as ages 8 to 17 months. A second, later study also by Berger and Cunningham (1981b) looked at the other infant signalling behaviours, smiling and vocalisation. Like eye contact, these too were found to be both delayed and qualitatively different from those shown by nonhandicapped infants. A still more recent study by these researchers (Berger and Cunningham, 1983a) investigated more fully these differences observed in DS infants vocalisation patterns. Again mother-infant dyads (both DS and non-handicapped) were observed over the first 6 months of the infants' lives, and it was observed that insofar as the nonhandicapped children were concerned, over the first 4 months of life, their vocal output steadily increased, but this was then followed by a rapid decrease, interpreted by the researchers as a manifestation of a quiescent stage as these infants began to actively listen to and process adult speech. In contrast, the infants with DS showed a significantly lower output of vocalisation over the first 3 months of life, compared to their nonhandicapped peers, but this increased rapidly over the 4-6 month age period. However, there was no manifestation of the sudden decrease in vocalisation shown by the "normal" babies, although it could be

argued that if the DS infants are very delayed in their development, then such a decrease might become apparent later on. However, there is some evidence to suggest that DS infants do not develop selective auditory preferences in quite the same way as do "normal" babies: a study by Glenn and Cunningham (1983) investigated the development of DS and "normal" infants auditory preferences when the infants were matched for developmental level at 9 and 18 months. At both ages, the infants were tested on 2 listening choices: a children's nursery rhyme versus a repetitive tone, and the child's mother speaking either "baby talk" or "adult talk" (i.e. speech used in conversation with babies versus that used to other adults). At both ages, both groups of children significantly preferred to listen to the nursery rhyme and to baby talk. However, whilst at 9 months, both groups showed a significant preference for the rhyme over the spoken speech, by 18 months, the "normal" infants' preference for baby talk had increased, such that it was preferred over the nursery rhyme. In marked contrast, at 18 months, the DS infants significantly decreased the amount of time they listened to the baby talk, and so still listened longer to the rhyme.

Other studies have also investigated apparent anomalies in the early development of children with DS. In Jones' (1980) study of slightly older DS infants, (babies ranging from 8 to 19 months), for example, it was found that whilst three-quarters of her sample of "normal" infants used eye contact as a means of referential communication, only one-third of her sample of DS infants did likewise. The infants with DS in this way seemed to be taking less initiative in interaction with their mothers than did their matched, nonhandicapped counterparts. Moreover, as a group, Jones notes that

they were very bad at turn taking in vocal dialogue, and tended to merely vocalise, with little or no consideration for their role as "interactive partners". Dunst (1975) too finds DS infants in Piagetian sensorimotor stages IV and V very bad at using referential eye contact, whilst Sorce, Emde and Frank (1982) find that DS infants are delayed in their spontaneous use of maternal referencing as a means of gaining information from their mothers' facial expression. This growing picture of the DS infant as a less interactive baby is again further enlarged by Buckhalt, Rutherford and Goldberg (1978), who, looking at DS infants of a similar age to Jones' sample (specifically 9.5 to 17 months) found that these handicapped infants were significantly less responsive, showing less smiling and less vocalisation, than the "normal" controls. Likewise, Greenwald and Leonard (1979) found that DS infants matched to "normal" controls for Piagetian sensorimotor stages IV and V differed from their nonhandicapped peers in that they used no words whatsoever and relied much more heavily on gestures for imperative and declarative communicative usage. Evidence also exists to suggest that DS infants' facial expressions are less intense and less specifically communicative. A study by Sorce and Emde (1982) presented mothers with photographs of facial expressions of both "normal" and DS infants aged 3 1/2 - 4 months, and asked them to identify the emotions conveyed in each picture, and to describe the message that each conveyed for caregiving. When the mothers were judging their own infants, they found that the mothers of "normal" infants reported a significantly higher proportion of high intensity expressions and a significantly lower proportion of low intensity expressions from their infants than did the mothers of infants with

DS. Moreover, when the photographs were shown to mothers not related to the infants involved, and who thus had no idea whether the infants had DS or not, a significantly higher proportion of low intensity expressions was still reported for the DS infants than for the nonhandicapped infants. When asked to indicate their caregiving response to each photograph, the mothers also found the photographs of the DS infants much harder to sort - i.e. their expressions were less specifically and less clearly communicative. Finally, although only 5 of the 30 mothers involved noticed the DS in the affected babies, when they were asked to choose a photo of an infant for whom they would most like to care and one of the baby for whom they would least like to care, all the mothers selected a "normal" baby in response to the first request, whilst 26 of the 30 chose a DS baby to fill the latter category.

In addition to this evidence that DS infants' facial expressions are both less intensely communicative and less attractive, there is also evidence to suggest deficiencies in the communicative effectiveness of both their crying and their laughter. A study by Freudenberg, Driscoll and Stern (1978) for example, matched tapes of the cries of "normal" and DS infants for intensity, duration and the age of the infants and played these tapes to adults (both female and male) between the ages of 20 and 36 years. The Experimenters found that the cries of the "normal" babies were rated as being far more unpleasant than were those of the DS babies and moreover, that there was a significant correlation between attention and unpleasantness: in other words, the more unpleasant the cry, the more likely it was to elicit attention from adults. Although half the subjects had had little experience with infants, neither this,

nor the sex of the subjects appeared to affect their reactions to the cries. The qualitative differences, however, found between the cries of the DS and the "normal" infants could perhaps be a reflection of the immaturity of the DS infants and may not be apparent, if the DS infants were compared to younger "normal" infants. If this were the case, then the results of the study may simply indicate that mature infant crying is more unpleasant, and thus more attention seeking, than immature infant crying. Moreover, as the correlation between attention and unpleasantness was only just significant, it would be interesting to see whether or not the observed difference in crying actually affects caregiving behaviour. In an early study, Fisichelli, Haber, Davis and Karelitz (1966) found the cries of DS infants under one year to be less active and shorter in duration than those of matched normal infants and also harder to elicit. However, as the eliciting method was to snap an elastic band on the soles of the infants' feet, this study could merely reflect "normal" infants' greater sensitivity to pain, rather than any significant difference or deficiency in the cry of DS infants. Cicchetti and Sroufe (1974) conducted an experiment which suggests that their ability to communicate via laughter and smiling is also delayed. In this study, a series of laughter items was administered to DS and "normal" infants. Whilst the various items elicited laughter in both groups of children, in the same order, the "normal" infants began to laugh at an average age of 3 to 4 months, whilst the DS children's onset of laughter was on average delayed to 10 months. Moreover, the more hypotonic the DS infant, the later the onset of laughter occurred and the less the child laughed in response to a given stimulus. This is perhaps similar to the

dampening of intensity of facial expression observed by Sorce and Emde (1982, above). However, it should be noted that in this latter study, Sorce and Emde found that despite the differences apparent to the mothers between the DS and "normal" infants, the DS infants appeared to elicit similar caregiving responses in mothers as the "normal" infants. In their own mothers, moreover, the DS infants seemed to elicit a "compensatory tendency", that is, their mothers stimulated them in response to expressions of low intensity which in "normal" infants may well have gone unnoticed, thus the DS infants propensity to low intensity facial expressions did not lead to any "interactional deprivation". This may well be a prelude to the tendencies of mothers of DS preschoolers, as reviewed below, to talk more and be more directive in interacting with their young DS children. However, before considering evidence of the maternal role played in the DS infants' communicative development over the first 18 months of life, it is perhaps useful to summarise the above studies and outline the picture of deficiencies and delays which they present for these handicapped children.

Overall, the picture of a DS infant is one of a less responsive and less communicative baby. Her earliest signalling behaviours are likely to be delayed in onset, and their developmental pattern may also be qualitatively different. Unlike nonhandicapped babies, a DS infant does not seem to use eye contact as much for referential communication, and thus she is less able to initiate interaction. Likewise her early vocalisation skills often do not appear to be very conducive to interaction as she will tend to be bad at turn taking and thus even at this early age, be a poor

conversational partner. Her facial expressions too, may be dampened and thus less communicative, and smiling and laughter are also often delayed in onset compared with that of "normal" infants.

Despite all this evidence for what perhaps can be described as DS infants being "less prepared for interaction" than their nonhandicapped peers, such manifestations of delays and deficiencies do not occur in isolation, and before assuming that these are perhaps the precursors of DS children's speech problems, the role of the DS baby's first conversational partner - namely, (in general), her mother - must also be examined.

1.1.1 Focus on the Mother

Several studies have indicated maternal influences on problematic mother-infant interactions (e.g. Esacalona, 1968; Stern, 1971; Field, 1977), and indeed, even those papers reviewed above which point to the infant's own deficiencies do indicate that these do not occur in isolation. Berger and Cunningham (1981), for example, in concluding that early infant signalling behaviours tend to be both delayed and qualitatively different from "normal" also observed that such delays and differences in infant behaviour tend to occur in conjunction with much more intense stimulation being provided by the mothers of these DS children, when compared to matched "normal" dyads. In Berger and Cunningham (1983a, reviewed above), for example, wherein DS infants were observed not to show a decline in vocalisation as found in the "normal" infants, (considered indicative, in the "normal" infants, of selective auditory attention to adult speech), it was also observed that whereas the mothers of the nonhandicapped infants decreased their

vocal output as their infants got older, the mothers of the DS infants actually increased the amount of verbal stimulation they provided concurrent with their children's increasing amount of vocalisation activity. This perhaps explains the finding of a relationship between increasing infant age and number of mother and DS infant vocal clashes, such a relationship not being found in the nonhandicapped dyads. This hypothesised maternal "over-stimulation" was investigated more fully in another recent Berger and Cunningham study (1983b). In this, they matched DS and nonhandicapped infants according to developmental level and asked mothers to interact with their infants within 3 specified conditions: (i) the mothers were to imitate their babies, (ii) they were to make them smile as much as possible, and (iii) they were to talk naturally to them. In conditions (ii) and (iii) the mothers of DS infants were found to be much more stimulating than "normal" mothers in response to lower infant smiling and vocalising (as noted in previous studies). However, in condition (i), wherein the amount of maternal stimulation was restricted and indeed, contingent upon the infant's behaviours, the DS infants' smiling and vocalising increased to levels almost as high as those shown by the nonhandicapped infants. It should be emphasised that in this study, the 2 groups of infants were matched for developmental level, and thus this latter result cannot be taken to suggest that altering maternal behaviours will erode the delay in development shown by DS infants. However the "over-stimulation" of the mothers of DS infants in conditions (ii) and (iii), compared with the improvements in the infants in condition (i) suggest that at the least, the usual behaviour of mothers of DS infants might not be conducive to alleviating their

infants' problems.

Jones (1980), in addition to the deficiencies manifest by her sample of DS infants, as discussed above, also investigated maternal behaviour during mother and DS infant interactive sequences. She found many examples of significant differences in the behaviour of the mothers with their infants, when compared to matched "normal" controls. The mothers of the DS children, for example, were found to be more directive¹ than the mothers of the nonhandicapped infants and tended to be involved much less often in child-dependent interactive sequences. The significance of this finding is perhaps increased if it is considered that according to research conducted into nondelayed child development, (e.g. Dunn, 1977), it is the experience of having a caregiver whose responses are promptly contingent upon the child's initiations that gives that child a sense of competence and effectiveness that in turn contributes to her developing mastery of the object world. Jones also found that the mothers of the DS children offered less interpretation and support of their child's own activities and in addition provided less informative expansion of their children's utterances than did the mothers of the nonhandicapped children. Again reference to nonhandicapped developmental theory emphasises the potential importance of these observations; for as Newson and Shotter (1974) argue, the expansion of a child's early utterances helps to provide the child with meaning for those utterances so that s/he can use them again to convey this meaning. Nevertheless, any cause-effect

¹The concept of maternal "directiveness" and problems in the definition and measurement thereof are discussed more fully in Chapter 5.

pattern is obviously far from clear, particularly as Jones unfortunately does not say whether those infants who did not manifest interactive deficiencies (approximately one-third of her sample), had mothers whose interactive behaviours were more like those of the control group than those of the rest of her experimental group. Interestingly, she does observe that the mothers of the DS infants expected far less from their offspring than did mothers of "normal" infants, and whilst this latter group saw interaction as enjoyment or playing, the mothers of the handicapped infants saw it as teaching. The issue of expectancy effects will be discussed in greater detail below, (see Chapter 2).

Jones' finding (noted above) that one-third of her DS sample manifest no delays in the behaviours she examined is consistent with the results of Dodds' (1972) study which revealed no significant differences between DS and nonhandicapped infants aged 9 to 13 months over a wide variety of vocalisation activities. Dunst (1975) too found that whilst comparisons of DS and "normal" infants matched on Piagetian sensorimotor stage did indeed reveal that the DS infants used referential looking less as a communicative behaviour, there were no differences between the 2 groups of infants on the number of nonverbal gestures, proximal or distal communicative acts used, or the inter patterning of gestural, visual and vocal behaviours. Most interestingly, there were no group differences in the number of child-initiated interactions, (i.e. the DS infants were as instigating of interactive sequences as their "normal" peers), but several differences existed between the 2 groups of mothers: specifically, the mothers of the DS infants were more directive, talked more and initiated more interactions than the

mothers of the nonhandicapped children.

In considering this latter study, it should be noted that its findings are only tentatively comparable to the others reviewed so far, as the infants were matched not on chronological age (CA), but on Piagetian sensorimotor stage, such that there could be large differences both within and between groups on CA. The problems in finding suitable control groups for DS children will be discussed in some detail below, but nevertheless Dunst's findings are not in total contradiction of studies with CA matched "normal" and DS groups. Buium, Rynders and Turnure (1974), for example, in a study of slightly older infants (aged 24 months) found similar differences in the maternal linguistic environments being provided for DS as compared to nondelayed infants. It was observed, for instance, that mothers of DS infants were producing more linguistic stimulation, but this was in every way less complex than that which was provided by the mothers of the nondelayed children. (This study is reviewed in greater detail below). Buckhalt et al (1978) also compared CA matched DS and "normal" infants, aged approximately 9 to 18 months and they too found that the mothers of the DS infants talked more to their infants than did the controls. Like Jones' (1980) study, however, Buckhalt et al also confirm that the DS infants' vocalisations were far more asynchronous to their mothers' activities than were those of the "normal" infants and that they were, overall, far less interactive. Indeed, these latter studies reviewed arguably paint a picture of infants who demand less of their caregivers in the way of interaction and yet receive as much, if not more than their "normal" peers, again enlarging on the idea of caregivers exhibiting "compensatory tendency", as discussed by

Sorce and Ende, (1982, above). Interestingly, it could be argued that this extra stimulation which mothers of DS infants appear to be giving is a result of the influence of the many intervention programmes aimed at DS infants, and is in that sense a current phenomenon, or "sign of the times" for in slightly earlier studies, this tendency is not apparently observed; in Carr's (1975) study, for example, mothers of DS infants are reported as being more likely to respond to their child's cries by comforting them, whilst mothers of nonhandicapped infants would try to stimulate and distract their babies. This seems almost in contradiction to the picture of mothers who use every opportunity and more to stimulate their offspring; but indeed Gunn, Clark and Berry (1980) in a single case study of mother's speech to a DS infant found that she showed directiveness only within the "normal" range, not an excessively stimulating pattern. However, even if enhanced by current philosophies and trends in baby care, there is nevertheless some evidence to suggest that mothers of DS infants are providing different linguistic environments for their children within this first 18 month - 2 year period of life as compared with mothers of nonhandicapped babies. It would seem that they are perhaps more directive and more stimulating, although their interactions are less focused upon the child's activities and initiations and are more dependent upon their own. They are also less interpretive of their child's activities and less expansive of their utterances. Their speech, whilst more abundant, it is suggested, is also less complex. In short, even at this very early age, it is apparent that it is extremely difficult, if not impossible, to outline any stringent cause and effect relationships. Instead, there appears to be a

complexity of differences, delays and deficiencies spread across the mother and DS infant dyad, making it apparent that even at this stage, it would be extremely difficult, if not impossible to draw any firm conclusions as to the extent to which patterns in the behaviours of either the infant or the mother over the first 18 month period contribute towards or predispose the DS infant to any later communicative difficulties.

1.1.2 Attachment

Before concentrating on the preschool period and research conducted on DS children in this 2-5 year age group (approximately), the development of attachment in DS infants will be briefly considered. (In general, this review will deal specifically with DS infants' attachment formation, omitting studies dealing with other mentally and/or physically handicapped infants whose concomitant sensory handicaps may generate additional difficulties not found in the DS infant; for a full review of this area see, for example, Blacher and Meyers, 1983). Research into "normal" development suggests strong and intricate links between mother-infant interaction and the bonding process, (e.g. Klaus and Kennell, 1976), and thus it may be that an abnormality in either one could prove detrimental to, or help explain deficiencies in the other. Certainly, the areas of mother-infant interaction and mother-infant attachment overlap to such an extent that it would seem somewhat limiting to focus only on the one. In the very early months of life, little work has been conducted, although Berger and Cunningham (1980) in their study into DS early signalling behaviours (reviewed above) observed that despite eye contact being both delayed

and in some cases, qualitatively different, it was still sufficient for the mothers to feel attached to their infants. Perhaps this is because over the entire period of the first 6 months of life, the DS babies actually "catch up" on their "normal" peers, in the quantitative sense, and show overall, the same total amount of eye contact as this latter control group.

In order to assess attachment in slightly older infants, several researchers have used as a gauge the DS child's response to strange (ie unknown) adults, as manifest in response to the Ainsworth "strange situation" experimental methodology (Ainsworth, Blehar, Waters and Wall, 1978). Serafica and Cicchetti (1970), for example, compared the reactions of CA matched DS and nonretarded children (aged almost 3 years) to the strange situation experiment and found the DS children to be less attached to their mothers - that is, to show fewer attachment behaviours than the matched control children, although, as Cicchetti and Serafica (1981) argue, DS and "normal" infants do still show very similar patterns of response. Similarly, Berry, Gunn and Andrews (1980) also examined the behaviour of DS children in the strange situation: their DS sample had a mean mental age (MA) equivalent of 14 months, (with a CA average of 2 years, the "normal" controls obviously having a younger average CA). They found no differences in the responses of the 2 groups of children, suggesting that the development of social awareness in DS children may well be delayed, but it is not qualitatively different from "normal". However, the point at which this delay becomes manifest is not altogether clear, and certainly does not seem to be a gradual progression from birth, for at 6 months, Tate (1979) found no differences between CA matched DS and

nonretarded infants in the strange situation experiment, with the DS infants actually smiling slightly more at their mothers at this age than did the "normal" infants. However, at 12 months, whilst all the infants, DS and non-DS, showed more approach to their mother than they had done at 6 months, the DS infants showed no distress at their mothers' departure from the room, whilst the "normal" babies found this distressing. The developmental progression of attachment in DS infants was investigated more fully by Cytryn (1975). In a large study of 76 DS children followed from 0 to 3 years, he also observed that the onset of attachment behaviours over the first 6 months was only slightly, if at all delayed, but that in the second half of the first year, a greater delay was manifest, with 20 per cent of his sample showing no separation anxiety even at 3 years, and 85 per cent showing neither separation anxiety nor fear of strangers until the end of the second year of life. However, as Cytryn observed, despite these high proportions, still 15 per cent of his sample showed the onset of both separation anxiety and fear of strangers at the usual time. Moreover, this non-delayed group did not show significantly higher IQ scores, but very close mother-infant relationships. This study thus suggests that, despite tentative discussions in "normal" developmental theory of a link between early mother-infant attachment and later IQ scores (e.g. Klaus and Kennell, 1976), (and indeed between early mother-infant attachment and the development of object permanence (e.g. Bell, 1970)), insofar as DS children are concerned, such a link may be less than straightforward. Given that by 3 years of age, however, only 20 per cent of Cytryn's sample had failed to show the expected developmental progression of attachment, the evidence seems overall

to suggest a delayed, but normal, progression of attachment developing in the DS child.

Nevertheless, as when considering mother and DS infant interaction generally, so here too it should be noted that attachment is necessarily a dyadic process, and as such, the role of the mother (or the primary caregiver) cannot be ignored. In a study by Mercer (1974), for example, mothers' attachments to their newborn infants were studied in a sample of infants with some form of defect/disability, including DS. Whilst Mercer observed that over the first 3 months, attachment behaviours increased, many mothers showed and spoke of problems in touching and holding their infants in the earliest weeks. Almost inevitably, the birth of a handicapped child comes as a traumatic shock to her/his parents, (Bicknell, 1980; MacKeith, 1975; Newson, 1983), and although as Bicknell (1980) discusses, overt rejection of the infant is quite rare, many mothers do report that they felt hesitant about becoming attached to their babies, (Drotar, Baskiewicz, Irvin, Kennell and Klaus, 1975). This is perhaps exacerbated by the often reported insensitive imparting of the diagnosis to the parents, (Richardson, 1977; Stone, 1973; Hannam, 1975; Murdoch, 1983; Cunningham, Morgan and McGucker, 1984; etc.), and the tendency to separate the infant from her/his mother immediately after birth (Murdoch, 1984), despite the contraindications which "normal" infancy research suggests should be attached to such a procedure, (e.g. Klaus and Kennell, 1976). However, as Ende and Brown (1978) discuss, such problems can be further exacerbated by DS infants' tendency to lack a full social smile, thus not providing the same positive reinforcement for their parents as do "normal" infants. Similarly, Stone and Chesney (1978)

conducted an investigation into the infant behaviours which are possibly solicitous of maternal attachment behaviour, and found that in nearly all, DS infants showed disturbances; specifically, their mothers reported them to be limp when held, not active, unresponsive, not demanding of attention, lacking in visual contact, and seldom smiling, crying or vocalising. Whilst it could be argued that mothers' observations such as these are exaggerated by their own lowered expectations for the children, it could still be, as the authors argue, that the child's delays or deficits fail to stimulate the mother, which leads to the failure of the mother to interact with the infant, and thus the situation where, unlike with "normal" babies, the DS infant's behaviours operate to generate environmental responses which increase, rather than resolve, the infant's problems. Stone and Chesney's data are based on a longitudinal study of a sample of infants involved in a support-providing intervention programme, amongst them 8 mothers and DS child dyads. Interestingly, however, of these 8 dyads, 3 were enrolled before the infants were 5 months, (the others were enrolled just before one year), and in these infants, smiling and vocalising behaviours were not observed to be disturbed, unlike in the later enrolling DS children. This offers further support to the hypothesis that the development of attachment behaviours, whilst evidently delayed by the child's handicapping condition cannot be considered in isolation from the role played by the primary caregiver as the most significant aspect of the child's social environment.

Indeed, to summarise this brief review of the studies conducted into mother and DS infant attachment, it is likely that once again there is a complex matrix of mother-infant cause and

effect relationships. Moreover, whilst it is evident that it is essential for a mother and her DS infant to build up strong attachments, both for their own mutual satisfaction and enjoyment, and also to enable the mother to fulfill most effectively the role that is now "expected" of the primary caregivers of handicapped children, namely that of teacher/therapist (Bromwich, 1976), it is extremely difficult, and arguably methodologically unviable to investigate the attachment process outwith the general communicative development of the child. As the studies above illustrate, the very behaviours used to define attachment (crying, smiling, vocalisations and so on) are a subset of communicative behaviours as a whole. Thus the absence of, say, smiling, shown by an infant to the mother on reunion in the strange situation experiment may well indicate impaired attachment, but likewise, it could also or at the same time be indicative of the DS infant's dampened and delayed early signalling behaviours. It is arguably more objective to treat these behaviours simply as specific, explicit behavioural categories than to attach emotive labels to them which in themselves, contribute little to either our understanding of DS infants or to notions of positive intervention for them and their families.

1.2 The Preschool Period (2-5 years, approx.)

In reviewing the literature concerned with DS children's communicative development over the first 5 years of life, the duration is marked between the infancy period (0-2 years CA, approximately) and the preschool period (2-5 years CA) most strikingly by the change in methodological approach. Whilst much of the infancy work has involved longitudinal home-based observational

work, in the older age group, little if any longitudinal data is available, and there is an increase in the use of experimental laboratory-based investigations. This methodological difference alone renders the area somewhat lacking in continuity and thus it is difficult to show conclusions or generalisations across the five year period. Within the research conducted into the preschool period, many studies have concentrated almost exclusively on the linguistic output provided by the mothers, still others have focused on the deficits in the child's linguistic competence, whilst a few studies have looked at the interactions between mother and retarded child. These 3 "groups" of studies will now be more closely examined; the literature investigating those older children yet with mental ages (MAs) within the preschool years will then be reviewed.

1.2.1 Mother-focused Studies

As with the studies involving infants (reviewed above), the majority of the research involving preschoolers also only began within the last decade. A study by Buium et al (1974), for example, compared 5 mother and DS child dyads with 5 mother and nonhandicapped child dyads, all the children being 2 years old and matched for socio-economic level (SEL) and maternal IQ. They made video recordings of the dyads during structured play and teaching tasks and then analysed the speech used by the mothers for its grammatical features, sentential structure, vocabulary and productivity. The results revealed the DS mothers to be much more linguistically productive, but using speech that was much less complex, both syntactically and semantically, than their matched "normal" peers. As with the infancy studies, this included some

evidence that the DS mothers were more directive; specifically, they were found to be more commanding than the "normal" mothers. However, Davis and Oliver (1980), in comparing mother and retarded child dyads (ie not exclusively DS children, but retarded children of varying aetiologies) with matched "normal" mother-child dyads found that whilst the mothers of the retarded children were indeed more vocally stimulating, they were in fact less directive than their matched counterparts. However, as noted earlier, this study did not involve only DS children (of the 8 retarded subjects, 2 had DS) and, moreover, the 2 groups were matched not on the children's CAs but on aspects of their development, thus there was much disparity in CA between the 2 groups, with ages ranging from 8 months to one year 5 months in the control group and from 18 months to over 5 years in the MH group. O'Kelly-Collard (1978) however, matched "normal" and DS children according to their developmental and linguistic progress (as well as on demographic variables) and found that mothers' speech to the two groups of children was very similar. The problems in the selection of appropriate control groups and the validity of comparing studies conducted with differing types of control matching, (see Table 1.1 for a summary of these problems) will be discussed in some detail below. Suffice to note that it may well be that the apparent contradictions between Biuim et al's (1974) results and Davis and Oliver's (1980) results may be at least in part due to the very different experimental designs employed by the two studies.

Biuim et al noted amongst their results, that the mothers of the DS children used far fewer Wh-type questions than did the controls. Within "normal" child development literature there is

much evidence as to the frequency and importance of maternal interrogatives in child-directed speech (e.g. Lombardino, 1978; Savic, 1975 etc.). More recently, therefore, Lombardino, Klein and Saine (1982) investigated the use of maternal interrogatives to either facilitate or fragment discourse within the context of mother-nonhandicapped child and mother-DS child play interactions. As a group, they found that mothers used twice as many facilitative as fragmenting interrogative strategies, and their study re-affirms the importance of this, particularly, they propose, for use with language handicapped children. However, unfortunately, Lombardino et al do not compare the 2 groups of mothers (the DS and the "normal") to examine whether either group used more facilitative interrogative strategies than the other. Bidder, Gray, Pates and Beckett (1983), however, trained parents of DS children not to use questions with yes/no answers but to employ more Wh-interrogative strategies, and they found a significant improvement in the language of the handicapped children, both qualitatively and quantitatively. However, to further complicate the issue, Cheseldine and McConkey (1979) conducted a study wherein they gave the parents of early language learning DS children a language objective towards which they were to work with their children, (specifically to encourage 2-word utterances, with particular emphasis on using verbs), but they gave them no instructions as to how to attain this goal. They found that parents spontaneously changed their language strategies, but that the most successful parents were those who adopted the strategy of using more target words in shorter statement-like utterances, whereas those parents who used a strategy of increased imitating or questioning of their child were largely unsuccessful.

A subsequent study by McConkey and O'Connor (1982) based an intervention programme for DS and other mentally handicapped (MH) children on this finding that parents could effect improvements in their children's language. Specifically, parents were taught to use short utterances in response to their children, and to use information giving statements, rather than questions. Whilst this did result in both changes in parental speech and marked improvements in their children's language usage, the absence of any control group makes it impossible to ascertain whether these changes were due to the specific nature of the intervention, or to increased parental attention, children's maturation or other extraneous variables. Cheseldine and McConkey's (1979) observation of the unsuccessfulness of imitation is interesting, however especially with reference to Petersen and Sherrod's (1982) study, wherein they observed in their comparison of the mothers of DS, "normal" and language delayed children that the mothers of the DS subjects sought more imitation from their children than did the other 2 groups. It could be that imitation is a strategy adopted by parents of DS children more than by "normal" parents, perhaps simply because DS children are stereotypically supposed to be good imitators, or indeed, because some intervention studies teach parents to encourage imitation in DS children (e.g. Salzberg and Villani, 1983). Quite surprisingly, Petersen and Sherrod also noted that DS parents used more semantically unrelated child directed speech than the "normal" parents, but less than the learning disabled parents, and yet the DS parents particularly showed this tendency towards the more linguistically able DS children.

It is indeed difficult to draw even tentative generalisations

based upon research in this area; confounded by methodological problems, the studies focusing exclusively on the maternal linguistic environment shed little light on how this might affect or even correlate with the problems of the language handicapped DS child, although from "normal" child development literature alone, its importance cannot be denied (e.g. Clarke-Stewart, 1973). Many studies tend to be mainly concerned with short term "therapeutic" aims (e.g. Bidder et al, 1983), and thus they make firm conclusions about how a DS child comes to speak as she does impossible to draw.

1.2.2 Child-focused Studies

In contrast to studies focusing on the mother, the child-focused studies in this area tend to use similar types of control groups, thus facilitating comparison between studies. A study by Coggins (1979), for example, investigated the relational meanings encoded by DS children at Stage 1 of their language development and found that these children concentrate on the same small set of relational meanings as nonhandicapped (younger) children when at this stage of development. In a subsequent study, the same author (Coggins and Morrison, 1981) looked at the imitative speech of DS children in this first stage of language development and compared their behaviour to that found in "normal" children at this stage, ("normal" children being as a rule, between one and a half and 2 years when at this stage; the DS children in this study were aged between 3 years 10 months and 6 years 3 months). Again, the pattern for the handicapped children was found to be very similar to that found in "normal" children: specifically, the DS children showed the same frequency of spontaneous imitation as their

nonhandicapped peers; like "normal" children, they tend to imitate speech more often immediately than after a delay of, say, a few utterances. Interestingly, again like "normal" children, the handicapped preschoolers also showed selective imitation and they tended to use certain words in spontaneous imitation as distinct from their vocabularies used in spontaneous speech. As the authors themselves point out, conclusions drawn from this study can only be tentative as their sample size was very small (4 DS children only). Nevertheless, both this study and also the previous investigation (Coggins, 1979, above) do suggest a similarity in the language development of DS and "normal" children, although that of the DS preschoolers is obviously retarded quite significantly. Likewise, a recent study by Owens and MacDonald (1982) which also compared "normal" and DS children matched for linguistic stage, (specifically Stage 1 and Stage 3, as calculated by the subjects mean length of utterance [MLU]) also found no significant differences between the DS and nondelayed children. However, this study too employed small subject groups (6 DS and 6 nondelayed children). Indeed whilst these few child-focused studies do point to the same developmental pattern being revealed in DS as in "normal" children, albeit delayed, (an argument which will be considered in some detail below), any conclusions must be tempered by the small sample sizes used (notwithstanding the significant "in depth" insights that such studies allow) and also, at present, by the very small number of studies conducted.

It should also be noted that several other investigations involving older DS children (but with MAs in the preschool period) have been child-focused and have likewise compared DS and "normal"

children matched on some aspect of development. These will be reviewed below, but suffice to note here that as DS children's retardation becomes more pronounced, so the disparity in CA between matched "normal" and DS subjects becomes much greater, bringing additional methodological drawbacks and potentially confounding variables (e.g. differences in the children's sizes). Thus studies will be considered here which involve both DS and "normal" children within a similar CA range distinct from those with large disparities in CA, (see, for example, Rondal's work as reviewed below).

1.2.3 Mother and DS Child (or Nonspecific Mentally Handicapped Child) Interaction Focused Studies

As MacDonald (1982) argues in his discussion of strategies for language intervention, communication is more than simply language (be this the speech of the child or of the mother), and any study or intervention must take into account the reciprocal effects of the mother and child upon each other. Indeed, perhaps more importantly when considering the pragmatics of enhancing the handicapped child's retarded development, several studies (e.g. Ramey, Farran and Campbell, 1979) have outlined close relationships between patterns of early mother-infant interactions and the child's later IQ scores, suggesting the predictability of the latter from the former (Ramey et al, for example, suggest the variance explained might be as high as 65%). Whilst it is indeed acknowledged (as Belsky, Goode and Most, [1980] affirm) that correlations can throw no light on explanations of causality, they nevertheless emphasise the need to more fully investigate the possibility of aberrant aspects of this early relationship as possible precursors to later developmental

problems.

Many studies focusing on both mother and child have used MH children of varying aetiologies. Wolf (1975), however, did look at specifically mother and DS child dyads. When the DS and "normal" children in his study were aged 2 years and then again at 5 years, he videotaped them engaged with their mothers in a specific task, namely, the mothers were to teach their children to set a table. The communicative behaviours (e.g. attention, feedback, affect etc.) of both mother and child were then analysed, but the only major significant difference to be revealed was that DS children themselves show a communicative deficit when compared to CA matched nonhandicapped children - a not wholly unpredictable result. As in some of the studies reviewed above, there was a slight tendency for the mothers of the DS children to be more directive (in that they used more management behaviours) and to talk more than their "normal" peers, but neither of these observations reached significance. Nevertheless, it should be noted that this overall lack of significant findings may be at least in part due to various extraneous variables. In particular the mother-child dyads were not matched (for example, for SEL, maternal age, etc) and indeed, there were 14 DS dyads and only 5 "normal" controls. This lack of significant differences observed by Wolf is in contrast with the findings of both earlier and more recent work in this area.

Recently, Stoneman, Brody and Abbott, (1983), for example, looked at the interactions between DS children and their mothers, and also these children interacting with their fathers, and at parent-child triads, and compared them to matched nonhandicapped family dyads and triads. In contrast to Wolf's (1975) study, these

analyses revealed many significant differences between the parents of DS and nonhandicapped children. Specifically, parents of DS children were more directive towards their handicapped offspring in the form of showing more helping, teaching and managerial behaviours and as such, within both dyadic and triadic interactions, the handicapped families showed much less egalitarian type interactions with more clean cut role asymmetries than were manifest by the "normal" controls. This is not to imply that such a pattern was due to parental behaviours in isolation: the DS children were also found to be significantly less responsive than the non-handicapped children. These results pose the question of whether the DS parents' extra responsiveness and directiveness is due to their awareness of the child's limitations or whether they are responding to their child as if s/he was a younger infant, a question which, as Stoneman et al point out, might have been answered at least partially, if their "normal" sample was matched to the DS children on MA, as well as on CA (i.e. 2 control groups). However, as with many such studies, the cause and effect problem would still remain unanswered: is it the child's unresponsiveness which fosters greater parental directiveness, or vice versa?

Crawley and Spiker (1983) investigated the correlations of maternal and child behaviours in 18 mother and DS child dyads engaged in semi-structured play. They found that whilst measurements of maternal stimulation positively correlated with the children's score on the Mental Development Index (MDI) of the Bayley Scales of Infant Development (BSID), no such correlation existed between maternal directiveness and child's MDI. Aspects of the child's responsiveness, namely social initiative, social

responsibility and play maturity correlated significantly with MDI. So this study goes some way in at least suggesting a link between maternal stimulation and child's responsiveness and developmental level, although the cause and effect question must again remain unanswered.

Some of Stoneman et al's findings, however, are similar to those of studies of mentally handicapped children generally. In a study by Marshall and Hegrenes (1972) for example, mother and nonhandicapped child and mother and MH child dyads were videotaped during unstructured, laboratory-based mother-child play, and compared to each other. (There were 20 3 to 5 year olds in each group, matched for CA). The analysis conducted revealed the MH children to be more echoic than the controls, and their speech was also less complex. (Specifically, the Skinnerian analysis used showed them to be using fewer tacts, mands and intraverbals). Concurrent with this pattern, the mothers of the MH children were found to be more directive (ie to use more mands) than their non MH peers. A study by Mash and Terdal (1973), moreover, noted that training mothers of MH children to reduce their levels of directiveness resulted in an enhancement of the children's interactive behaviours. Kogan, Wimberger and Bobbitt (1969), looking at structured play within the laboratory setting did not find such differences in directiveness of mothers, although they do describe mothers of MH children assuming low status in relation to their offspring less often than did matched "normal" controls. Also they observed MH mothers to exhibit more extreme degrees of warmth and friendliness more often. Simultaneous with this, the MH children were noted to be overall more neutral in status towards

their mothers and to be much less actively involved in interaction with their mothers than were their "normal" counterparts, (which could perhaps involve more assertiveness from their mothers). Indeed, the handicapped dyads in this study actually did nothing more than anything else, whereas the control dyads' predominant activity was interacting together and in turn. Unfortunately the groups in this study were not matched for socioeconomic level (SEL), with the result that the nonhandicapped sample were drawn from a much higher SEL. Thus whilst, as proposed above, the MH children's lack of active involvement in interaction could have prompted greater assertiveness from their mothers, it could alternatively be that their mothers are more assertive, thus inhibiting their offspring's attempts at initiating interaction. Such a finding of greater assertiveness in the MH mothers could be due to the social class differences, as could the finding that these dyads did nothing together more often - a possible effect of social class enhanced by the study being based in a laboratory setting which is arguably more "foreign" and thus more inhibiting to lower SEL persons.

Terdal, Jackson and Garner (1976), in their comparison of mother and developmentally delayed child and mother and nondelayed child dyads again during laboratory based structured and unstructured play also omitted to control for social class. Tempering any consideration of their results with this methodological problem as discussed above, these authors also found support for the notion of greater directiveness in mothers of MH children. In particular, they observed that the more handicapped the child (i.e. the lower her MA), so the less responsive s/he was to her mother, and the more directive the mother tended to be.

Moreover, the authors also noted that mothers of handicapped children found their children's behaviour much less obvious, such that they had difficulty in describing or labelling its various nuances, and that these mothers also showed poorly differentiated consequences to both appropriate and inappropriate child behaviour, (for example, they tended to give as much positive feedback to inappropriate behaviour as they did to appropriate behaviour).

As with many of the studies in this area, not only are they complicated by methodological drawbacks or lack of adequate control groups (e.g. no match for social class), but they also tend to present a tangled web of possible cause and effect relationships. The above findings, for example, could suggest that deficits in the children's behaviours (their being less responsive and showing less distinct expressive, affective or emotive communications) can lead to their mothers needing to assume a more directive role and having difficulties in interpreting their children's communications, thus making an appropriate response more difficult. However, equally it could be that maternal directiveness inhibits the child's responsiveness and that mothers' poorly differentiated responses consequent on both appropriate and inappropriate behaviours hamper the child from developing more distinctly differentiated behavioural nuances.

A more methodologically rigorous and controlled study in this area is that conducted recently by Eheart (1982). Again mother and MH child and mother and non-MH child dyads were compared using videotapes of mother-child play interactions. The 2 groups were matched for social class, and the children were matched on the basis of their play behaviour, with the 8 "normal" children being aged

24-31 months and the handicapped children being somewhat older - 39-49 months, with one child at 57 months. Comparisons of the communicative behaviours of both mothers and children revealed a matrix of significant differences. Mothers of the MH children, for example, were found to initiate far more interactions than did the control mothers, but responded less frequently to their children's responses. The handicapped children were themselves significantly less responsive than their matched peers. Insofar as play was concerned, that of the "normal" dyads was controlled far more by the children: they introduced more toys than did their mothers, and more of the interaction revolved around the child-chosen activities than around the mother-chosen activities. This trend was reversed (albeit insignificantly) in the MH dyads.

Insofar as the picture is of MH mothers being more directive, this study confirms and indeed emphasises this finding: Eheart's sample of mothers of MH children used nearly three and a half times as many directive utterances as did the control mothers.

As Eheart discusses, this study draws an image of the behaviour of mothers of MH children being uncondusive to the fostering of social adaptability in their children, compared with the behaviours shown by "normal" mothers. However, although this study does employ more rigorous controls than the others reviewed in this section, there is still no means of unravelling the web of cause and effect factors: for example is the mothers' increased directiveness a result of, or a causative factor in explaining the children's decreased responsiveness, or in fact, are both equally significant? An additional problem with this study is that there is a much larger amount of variance of interactive behaviours within

the MH dyads than within the non-MH dyads. Not only does this reduce the generalizability of the findings, as the author points out, but also the study does not investigate correlations between the mother child variables - do the more directive mothers, for example, have less responsive offspring? Such a finding which would at least reveal whether the apparent web of cause and effect variables is as closely related as it appears to be, (e.g. as in Terdal et al's study, discussed above).

An additional problem with many of the studies in this area is one of applicability to specific investigations of DS infants and children. Whilst some may question the validity of the form of "aetiological separatism" which results in DS children being investigated as an homogenous group, the category "MH" simply includes any child (in this country and the U.S.A.) with an IQ below 70. This may well include children with sensory impairments or physical handicaps (most DS children have neither), and also children whose MH may not have been detected until several years after their birth, again unlike DS. This latter factor could possibly cause major differences in the mother-child relationship.

Nevertheless, tempered by considerations such as these, the studies within this section emphasise the need to consider both the mother and the child when investigating communicative development. It seems apparent that the children's problems cannot be attributed wholly to either their handicapping condition nor to their parents' behaviour, but to the interaction between the two. It remains to assess, however, how closely the two are linked and, perhaps more importantly from the point of view of intervention, to determine whether any specific characteristics of maternal behaviours can be

either enhancing or detrimental to the child's progress.

1.3 The MA Preschool Period: 5 Years (CA) and Older

(N.B. the term "preschool" is used only superficially: children involved in studies in this group have CAs over 5 years, but being retarded, have MAs within the "normal" 2-5 year range. However, being over 5 they obviously all attend school and in this sense are in no way "preschool").

Studies within this section again tend to fall loosely into mother-focused or child-focused investigations.

1.3.1 Mother-focused Studies

This section, and indeed, much of this area, is dominated by the work of Jean Rondal and his colleagues. He has conducted several studies on a sample of 21 mother and DS child dyads and 21 nonhandicapped control dyads. The mothers in these 2 groups were matched for age and social class, whilst the children were matched for mean length of utterance (MLU), such that the DS children ranged between 3 and 12 years, and the nonhandicapped children between 20 and 32 months. Comparisons of maternal speech to these 2 groups of children (e.g. Rondal, 1978a) revealed very similar patterns and led Rondal to conclude that the expressive language level of a child is a more powerful factor influencing maternal speech than whether s/he has DS or not. Interestingly, another study (Gutmann and Rondal, 1979), which used the same sample but conducted a Skinnerian type analysis on the recorded mother-child interactions found that whilst indeed the child's MLU did seem to have a bigger effect on maternal speech than any diagnostic label, the mothers of the DS children did

seem slightly less directive - albeit insignificantly - than the control mothers, (specifically, they used fewer mands), and they also used significantly more intraverbals.

Thus whilst Rondal's work does mainly suggest that mothers are unaffected in their child-directed speech by whether or not their child has DS and are instead most influenced by her/his actual language level, there is some small amount of evidence to indicate that some very subtle differences might occur regardless of the MLU of the child.

1.3.2 Child-focused Studies

Rondal has also focused some studies on the DS child's language, again within the experimental design of matching DS and non-MH children on MLU. He found (Rondal, 1978b) that despite being matched for linguistic level via MLU, the DS children were syntactically less sophisticated than the "normal" controls; in particular, they used more main verbs, whereas the non-handicapped children used more secondary verbs. This latter control group also used more advanced indefinite pronouns and showed a more advanced use of interrogative utterances (reversal of the subject and copula, and the auxilliary verb "to be").

This suggestion that there are subtle deficits in the DS child's linguistic ability even when compared to linguistically matched "normal" children is further enhanced by a more recent study (Rondal, 1980) which looked at DS children's imitative ability. Again whilst overall the ability to imitate progressively longer utterances increased with the child's increasing language level, regardless of diagnostic classification, there was still a subtle

effect peculiar to the DS children, namely that they imitated more modifiers out of maternal language than did the non-MH children. Interestingly, a similar study by Rondal, Lambert and Sohler (1981) which tested the ability of DS and other MH children to imitate utterances of progressively increasing length revealed the DS children to be significantly worse than the other MH children, even though the 2 groups were matched on both CA and IQ. The authors discuss whether this finding could be explained by DS children having specific and peculiar problems with short term memory and/or articulation. Whether or not either of these explanations is correct, this finding certainly contradicts the popular DS stereotype and also warns against intervention with DS children that might seek to use imitation (e.g. Salzberg and Villani, 1983). Most of all, perhaps, it emphasises the case against the validity of generalising to DS children from studies conducted with MH children of varying aetiologies (e.g. Eheart, 1982 above, etc.) as it suggests that DS children could have linguistic problems specific to the syndrome itself and not simply due to their low IQ, a suggestion supported by several studies in this area (e.g. Bilovsky and Share, 1965; Clausen, 1968; Johnson and Olley, 1971; Gibson, 1975; etc.).

Overall, both the mother-focused and the child-focused studies in this area suggest that differences specific to both DS children and their mothers do exist, and not just as a result of the child's linguistic level, but that these differences are more subtle and perhaps harder to detect than those found in studies of younger DS children.

1.3.3 Interaction-focused Studies

A study conducted by Cunningham, Reuter, Blackwell and Deek (1981), which compared the interactions between matched mother and MH child and mother and non-MH child dyads, (although again it must be noted that the handicapped sample was not specifically DS). This study revealed differences between the 2 groups of children and the 2 groups of mothers and also between the patterns of interactions manifest by the 2 groups of dyads. The MH children, for example, were less interactive and responsive and spent more time in solitary play than did the "normal" children, and also the mothers of the former group initiated fewer interactions than the non-MH group mothers. Insofar as directiveness was concerned however, the mothers of the handicapped children exerted more control over the play interactions, but even though their children were no less compliant than "normal" children, they still used more commands and were less likely to show positive responses to co-operative behaviour than "normal" mothers. Even with the higher MA handicapped children, who were more interactive, responsive and initiating than the lower MA children, their mothers were still less responsive and more directive than "normal" mothers. As the authors suggest, particularly with higher MA handicapped children, this lack of maternal responsiveness to the child's initiations is likely to lead to frustration and indeed, it could be that this study provides evidence of maternal responses which contribute to the difficulties that handicapped children have in interaction and expressive language development.

1.4 Methodological Considerations

In addition to the problems of generalising from studies of MH

children to specific areas of DS children's development, consideration of Cunningham et al's (1981) study also focuses attention on another, equally problematic methodological consideration. Like Rondal's work, this latter study involved a great disparity in CA between the experimental and control groups, with the MH children being aged between 28 and 96 months and the controls between 18 and 54 months. This raises the issue of the selection of adequate control groups for studies with DS children, and this and other methodological issues will now be considered.

1.4.1 Assumption of Homogeneity

As was discussed above, one of the problems when considering studies conducted with a sample drawn from the MH population as a whole is the degree to which any conclusions can be said to generalise to specific populations, such as DS children, (see above). However, the reverse of this problem, as Rynders, Spiker and Horrobin (1978) point out in their review of a decade of DS developmental literature, is the assumption of the homogeneity of a DS sample which often underlies studies in this area. Thus they show how many studies use groups of DS children who may not be of the same sex, age, or social class, who may be from institutions and/or home environments, and who may even have dissimilar genetic diagnoses (e.g. some may be trisomy, and some mosaic), and how in many cases such sample details as these are simply not provided. Demographic specifications which are rigorously described in "normal" child development literature are implicitly considered in many studies to be of negligible importance insofar as DS research is concerned. As some of the studies reviewed above have indicated,

this assumption implies that the diagnosis "DS" creates a strength of similarity within a group of subjects selected with this condition that is not found in a randomly selected sample of "normal" children. As Rynders et al point out, this assumption is both erroneous and potentially confounding; the applicability of, for example, conclusions drawn from studies of institutionalized DS children to DS children reared in the home environment is arguably as problematic as extrapolating from general MH samples to specific DS groups.

Nevertheless, it should be noted that Rynders et al reviewed literature across the period 1967-76, and in more recent years, a greater degree of control has been applied to the selection of samples and also to the reporting of the criteria used for such selection (although this is still not always the case: a recent study by Mahoney (1983), for example, set out to test this very assumption of the homogeneity of the population of mother and DS infant dyads, with particular reference to interaction style, but did so by comparing two such dyads who were unmatched for either maternal educational level or infants' sex). Even with this overall increase in the rigour of experimental design, many methodological problems still underlie the research in this area, not the least of which is the selection of control groups.

1.4.2 Selection of Control Groups

If it is accepted that given adequately rigorous selection criteria, a sample of DS children does form a discrete and homogenous group for the purpose of developmental study, (a not wholly uncontended view), then the problem arises as to the

population from which the control group is drawn. Most studies (although not all) employ a group of "normal" subjects for comparison, which in a well-controlled study (again not all, as the above review has indicated) will be matched to the DS sample on the usual demographic details of sex, SEL, parental education and age etc., with the children also being matched on either CA or on MA, or in some cases, on a specifically relevant developmental variable, such as mean length of utterance (MLU). The advantages and disadvantages of these types of matching criteria will now be discussed.

(a) Chronological Age (CA)

It is evident that within the confines of a longitudinal study of DS infants beginning at or near to the birth of the infants (e.g. Cunningham's studies), only a control group matched on CA is appropriate - a MA match in the earliest weeks could be a near if not exact CA match, as within the earliest weeks, DS development can often seem very similar to that of "normal" infants, (e.g. Cunningham, 1979). (The more general problem of the validity of a "normal" control group will be dealt with in some detail below). However, within the preschool period, when the development of DS children is, almost without exception, markedly delayed, the notion of an MA match becomes possible, and with the increasing use of experimental and cross-sectional (as opposed to observational and longitudinal) studies, the choice of control group becomes more complicated. Reference to the above review, will serve to illustrate these difficulties (see also Table 1.1).

Within the preschool studies, both Biuim et al (1974) and

Buckhalt et al (1978), for example compared CA matched groups of DS and "normal" mother-child dyads and examined maternal speech styles during recorded interactions. These studies revealed a large range of differences in the speech used by the 2 groups of mothers (see above), and it might be tempting to conclude a maternal contributory role in DS children's language learning problems. However, the CA match necessarily means a huge disparity in MA between the DS and "normal" children, and thus studies such as these could simply be evidence of mothers' speech being geared appropriately to the child's developmental level, rather than CA. It could indeed be seen almost as a truism that mothers speech to children who are MH is different from that to nonhandicapped children, just as it might be expected that mothers' speech to infants will be different from that directed at older children or adults. Criticisms such as these as to the interpretation of studies using a CA match might suggest that experiments employing a match on some aspects of developmental level (e.g. IQ, MA, MLU, etc) would be more appropriate.

(b) Mental Age (and other developmental level indices)

Again reference to the above review illustrates that many studies used as a control group children matched on some aspect of developmental level, be this mental age, IQ, or a specific variable such as MLU, (e.g. Rondal's studies). Once again, however, problems in the interpretation of findings arise. Matching on these variables, in the case of Rondal's work for example, involved comparing DS children between the CAs of 3 and 12 years with nonhandicapped infants aged between 20 and 32 months. Any findings of differences or similarities in, say maternal speech styles

between the "normal" and "DS" mothers must thus be tempered by the consideration that the comparison under observation is between the speech of mothers to what are often fully grown children and that directed towards babies in arms. Similarly, the behaviour of these infants with a few months experience of life is compared with that of children who despite being mentally handicapped, have still experienced often as much as 12 years of socialisation. Moreover, the mother-child relationship is again on the one hand, a few months old, and on the other, is of several, if not many years duration. The utility of comparisons such as these, can thus be questioned as to the light they shed on any deficiencies or difficulties in the mother and DS child communicative relationship.

Reference to Rondal's work also illustrates the huge amount of variation in a sample of DS children: the "normal" infants at the early stage of speech development spanned the period 20-32 months, some 12 months in all, whilst the DS children were aged between 3 and 12 years. This huge amount of variation in developmental progress has been a factor in the argument that it is inappropriate to apply a model of "normal" development to DS children; that their development is not simply delayed, but is fundamentally different and thus calls into question the utility of comparisons with "normal" children. This issue will now be considered in some depth.

1.5 The Delay Difference Controversy

The delay-difference debate became a prominent issue in 1969, when a paper by Edward Zigler proposed that the development of children with mental handicap for which no organic cause can be found, but which appears to be due to social or cultural deprivation

was in no way different from that of "normal" children, except for it being delayed and reaching a lower ceiling; the developmental progression and underlying cognitive structures, it was argued, are the same. Even insofar as such "socioculturally" retarded children are concerned, this theory is quite contentious, (see, for example, Zigler, 1969; Milgram, 1969; Weisz and Yeates, 1981; etc.), but when the debate began to encompass those children whose retardation can be attributed to some organic or genetic cause (e.g. DS), (despite the specific exclusion of such children by the proponents of the "Delay" stance, such as Zigler and his associates [Zigler, 1969]) then the issue became all the more controversial. Nevertheless, controversies aside, it is a debate of crucial importance for if we are to base our intervention programmes for handicapped children upon current developmental theory and gear them according to our developmental assessments of these children, then we are assuming that their basic development will be at least similar to that shown by "normal" children, albeit slower. If this is not the case, then at the worst, such intervention programmes may be doing the children a disservice in actually hampering their development; at the least, we may not be maximising their developmental potential to its fullest. Moreover, insofar as experimental research in this area is concerned, this controversy further complicates the issue of the choice of a control group. The notion of a developmental age match (such as MA, or IQ), or indeed, of a match on a specific developmental variable (e.g. MLU) assumes that the development of the MH child will be both in the same sequence as her matched control, and that at each stage of development, the underlying cognitive structures will be the same for both children. If in fact

MH children, and in this case, specifically DS children, show different developmental trends and/or cognitive structures, then such matching is totally inappropriate. In considering the research conducted in this area, it has to be again noted that the original proponents of the Delay hypothesis (Zigler and his associates) specifically excluded children with organically caused retardation, such as those with DS. Indeed, Weisz and Yeates (1981) in their recent review of the debate as it pertains to "socioculturally" retarded children point out that those studies which conclude in favour of the "Difference" hypothesis are those which, in contradiction of the original population parameters, have included children with organic retardation such as DS, (e.g. Milgram, 1969).

A few studies have looked specifically at this debate as it relates to DS children. Rondal (1978), for example, matched DS and "normal" children on MLU, but still found the DS children to be syntactically much less sophisticated than their matched peers. He thus concludes in favour of the "Difference" hypothesis. However, as the above review has indicated, several researchers (e.g. Coggins, 1979; Coggins and Thomson, 1981; etc.) have found similarities in the development of DS and "normal" children when looking at language development, which would favour a "Delay" standpoint. Moreover, the debate is not restricted to language development. Wohlheuter and Sindberg (1975), for example, in a study of object permanence development in a general group of moderately, severely and profoundly MH children found that the DS children tended to show a steadily increasing, albeit slow Piagetian type progression, (as would a "normal" child). However, more recently, Morss (1983) looked at this area of development

specifically with DS children. He found that whilst there was similarity in the development of the DS and "normal" children at the level of the first achievement in the sequence of stages of object permanence development, (although the DS children were of course delayed in comparison to "normal" children), there were no further similarities. The errors of the DS children did not conform to the characteristic pattern, nor did they show stability of achievement - that is, they may well not repeat a successful performance. Morss thus concludes most emphatically that the cognitive development of DS children is not just slower than "normal", but it is also fundamentally different.

Whilst it is not proposed to review the delay difference debate more fully here, it should be noted that many of the studies and experiments considered above assume an implicit standpoint on this debate. (For example, if a researcher is considering maternal linguistic behaviour to developmentally matched infants, s/he is assuming that the specific measure of developmental level holds the same meaning for both infants - in other words, that 2 groups of infants, one DS, one "normal" with say MAs of 18 months or MLUs of 1.5 are developmentally similar). In considering the light they shed on the mother and DS child communicative relationship, or on the deficiencies in either mother's or child's speech styles, this assumption should be recognised and its present dubious standpoint should temper any conclusions drawn. Table 1.1 illustrates the complex and contradictory nature of this area.

1.6 Conclusions

It is indeed hard to draw any firm conclusions from the

literature in this area. Lack of control for demographic variables (such as SEL) and differences in criteria for the selection of control groups (e.g. CA, MA or MLU matching) makes it extremely difficult to compare the various studies conducted and, as stated above, notwithstanding such difficulties, conclusions must be tempered by an awareness of the implications of the as yet unresolved delay-difference debate.

However, given the indisputable importance of environmental influences on any developing child, this study sets out to examine the DS child's linguistic environment, both the contribution made by her mother, and that made by herself and to look more closely at those variables which might be amenable to changes that would ultimately benefit the DS child's language-learning progress.

Insofar as preschool DS children are concerned, therefore, Chapters 2 and 3 will deal with mothers' attitudes to their DS children and any concomitant effects of these on the linguistic environment they provide for their children. Chapter 4 examines idiosyncracies in the preschool DS child's language development and the problems this may pose for assessment of appropriate linguistic stimulation. Chapter 5 looks at particular aspects of maternal interaction style and relates this to the conclusions from the previous three chapters. Chapter 6 then presents an investigation of the roots of the phenomena described in the previous chapters, looking at the first 6 months of the mother-DS infant relationship. The overall conclusions are drawn in Chapter 7.

TABLE 1.1

Delay and Difference			
Child		Mother	
CA Match	Developmental Match	CA Match (children)	Developmental Match (children)
Berger & Cunningham, 1981 (0-12 mths)	Cunningham, C.E. et al., 1981, (MA match)	Berger & Cunningham, 1981 (as aside)	Cunningham, C.E. et al., 1981 (as aside)
Berger & Cunningham, 1983a (0-6 mths)	Dunst, 1975 (Piagetian sensorimotor stage match, IV & V)	Berger & Cunningham, 1983a (as aside)	Davis & Oliver, 1980 (behaviour match; 18 mths - 5 yrs)
Buckhalt et al., 1978 (9-19 mths)	Eheart, 1982 (play behaviour match)	Blum et al., 1974 (24 mths)	Dunst, 1975 (as aside)
Carr, 1975 (0-4 yrs)	Glenn & Cunningham, 1983 (DQ match at 9 & 18 mths)	Buckhalt et al., 1978 (as aside)	Eheart, 1982 (as aside)
Marshall & Hegrenes, 1972 (3-5 yrs)	Greenwald & Leonard, 1979 (Piagetian sensorimotor stage match)	Carr, 1975 (as aside)	Gutman & Rondal, 1978 (MLJ match)
Spritzer-Griffith, 1981 (8-17 mths)	Jones, 1980 (MA match 8-19 mths)	Marshall & Hegrenes, 1972 (as aside)	Jones, 1980 (as aside)
Stoneman et al., 1983 (4-7 yrs)	Kogan et al., 1969 (MA match)	Stoneman et al., 1983 (as aside)	Kogan et al., 1969 (as aside)
	Rondal, 1978b (MLJ match)		Terdal et al., 1976 (as aside)
	Rondal, 1980 (as above)		
	Terdal et al., 1976 (MA match)		
Delay Only			
Child		Mother	
CA Match	Developmental Match	CA Match (children)	Developmental Match (children)
Berry et al., 1981 (DS only, 24 mths CA, 14 mths MA)	Coggins, 1979 (MLJ match stage 1)	Wolf, 1975 (as aside)	O'Kelly-Collard, 1978 (MA and language levels)
Cicchetti & Serafica, 1981 (DS only 18 mths CA)	Coggins & Morrison, 1981 (MLJ match)		Rondal, 1978a (MLJ match)
Cicchetti & Sroufe, 1976 (DS only 18 mths CA)	Owens & MacDonald, 1982 (MLJ match: Stages I and III)		
Cytryn, 1975 (0-3 yrs)			
Sorce et al., 1982 (CA match but DS = 6-8 mths and N = 6-12 mths)			
Tate, 1979 (6 & 12 mths)			
Wolf, 1975 (2 yrs & 5 yrs)			

TABLE 1.1 to illustrate the variations in studies showing delay or difference findings. It should be noted that both insofar as mothers and children are concerned, nearly all the studies have investigated different independent variables.

CHAPTER TWO

AN INVESTIGATION OF MOTHERS' ATTITUDES
TO CHILDREN WITH DOWN'S SYNDROME

2.1 Introduction

As was argued in the above review, if intervention programmes with Down's Syndrome (DS) children are to become more successful, it is essential that some estimate of environmental factors be made in order to focus intervention more effectively. In particular, insofar as language development is concerned it must be ascertained:

- (1) Whether mothers (as the main providers of the child's linguistic environment), do alter their behaviour - particularly their language - when dealing with DS children (as distinct from children generally);
- (2) Whether any such alteration is an adaptation to the child's developmental level, and further adapts according to the child's progress; and
- (3) Whether any such adaptation ameliorates or retards the child's development.

Again, as was argued above, in studying mother-infant interaction, it is extremely difficult, if not impossible, to separate the effects of the mother from those of the child and to examine her language behaviour as distinct from the interaction as a whole; there is no way of determining whether it is the deficits or differences in the child's behaviour which foster maternal behaviour which in turn operate to maintain problematic child behaviour, or whether the reverse "loop" effect is true. Indeed in the same way, it is thus difficult to judge whether any such maternal adaptation is positive or not: is the maternal response or adaptation to the child's deficient behaviour geared to maximise and "normalise" this as much as possible, or does it serve to maintain problematic behaviour?

Given that "adaptation" (be this ultimately positive or negative in its effects), assumes some kind of perception of the child's behavioural characteristics and idiosyncrasies, and as intervention programmes often rely upon parents monitoring and encouraging their children, any distortions in perceptions and expectations held by parents may not be maximally conducive to enhanced or accelerated language development. Thus it was decided to first investigate mothers' perceptions of children with DS.

There is some evidence to suggest that such perceptions could be affected regardless of the child's behaviour, simply because of knowledge of the child's "abnormal" diagnostic categorisation or label. The notion of a "labelling effect" has been mainly investigated with teachers and other adults (rather than parents), and was largely triggered off in 1968 by Rosenthal and Jacobson's "Pygmalion in the Classroom" study. In this study, the experimenters demonstrated that manipulation of teachers' expectancies for pupils to succeed could result in a 'self-fulfilling prophecy', that is, those children who the teachers believed would succeed (in fact a random sample labelled as "bloomers" by the experimenters) did in fact move ahead of their classmates. This result has proved to be fairly controversial, and several studies failed to replicate the finding (e.g. Conn, Edwards, Rosenthal and Crowne, 1968; Clairborn, 1969).

However, a study by Seaver (1973) demonstrated the effects of teacher expectancies in a more naturalistic setting. He showed that pupils would achieve significantly greater success with teachers who had taught an elder sibling of their's, if that particular child had done well, than if their older sibling had done poorly, or if the

teacher had no prior experience with any of the pupils' family members. It appeared that an expectancy effect could be generated which then resulted in a self-fulfilling prophecy.

It is not proposed to review here this large area of "normal" educational literature; suffice to note that despite its controversial findings, "Pygmalion in the Classroom" and subsequent studies also resulted in a wave of research into the effects of the largely negative expectancies carried by the mentally handicapped label.

It has been argued (e.g. Dunn, 1968; Hobbs, 1975; Kurtz, 1977) that the application of the label "mentally handicapped" (MH) sets certain persons apart from the rest of the community, both insofar as the statutory provisions of schooling, housing, social services and health are concerned, and also in that the resulting category is distinct from that of so-called "normals", is thus "abnormal" and so stereotypically unpleasant and/or threatening. The dominance of this label is such that it makes it difficult for people to appreciate the positive attributes of many children called retarded or MH, particularly as the characteristics attributed to the MH stereotype tend to violate expectations for "normal" behaviour and are considered at the least, undesirable. Thus it is argued (e.g. Hobbs, 1975) that it is very easy for a handicapped child to be locked into a conceptual box, or category and so become more and more like that which her label requires her to be. Despite the abundance of arguments such as these and their intuitively appealing nature, particularly when considering a condition such as DS, which is diagnosed at birth and has a very strong, prevalent and well-established negative stereotype (that is to say that at the

very least, the lay-person has some conception of the DS child as being backward or perhaps, as Murdoch (1982) describes "a happy-go-lucky defective with musical tastes who is a burden to elderly parents and who is more often than not permanently institutionalised"), there is relatively little experimental evidence to validate these hypotheses when considering MH children in general, and even less when considering the specific effect of the "mongol" stereotype. Most of the studies have dealt with the diagnosing/labelling of mildly MH children, subsequently placed in special education, (hence recent moves towards "educational mainstreaming"), and the effect of this special placement on peer acceptance/rejection and self concept, (e.g. Mayer, 1966; Meyerowitz, 1965; Edgerton, 1967; Jones, 1970, 1971a, 1971b, 1972; etc.). Several other studies seem to illustrate little more than that the experimenters concerned have fallen victim to the precise effects of stereotyping that are being investigated, as the following quotation from Wilson (1970) may be said to demonstrate:

" . . . retardates are generally unacceptable because of bothersome, inappropriate or anti-social behaviour, including bullying, fighting, misbehaving, showing off, swearing, lying and cheating . . . or simply an absence of positive, likeable traits and behaviour."

Even in a more recent study by Gibbs and Thorpe (1983) which is one of the few investigations which sets out to specify the precise nature of the DS stereotype, the Experimenters begin by asserting that:

"since DS individuals all possess a common genetic abnormality, the concept of homogeneity of personality is plausible"

Underlying this very assumption is the tendency for the DS diagnostic label to be presumed to supercede and negate the effect of other variables, such as environmental effects on personality, long acknowledged in "normal" developmental literature. This not only affects academic research but also, as Hunt (1981) argues, results in many potentially curable complaints that affect DS children going untreated as they are seen as part of the syndrome and thus incurable.

Relatively few studies have attempted to investigate the effect of this stereotype on the expectancies or behaviour of adults in interaction with children thus labelled, and most of those which have focused on this topic have done so in the educational setting and thus with children over 5 years of age.

Foster and Ysseldyke (1976), for example, divided the teachers in their study into 4 groups and asked each group to list the behaviors they would expect from a child labelled in one of the following ways: normal, educable mentally retarded, learning disabled, emotionally disturbed, (i.e., only one label was assigned to each group). Each group then saw a videotape of the same "normal" boy, who was supposedly a representative of the labelled group. It was found that teachers held negative expectancies for children categorised with a deviant label (with the lowest expectancies being held for the mentally retarded child), and that the expectancies were maintained, even when confronted with "normal" behaviour. Similarly, in an unpublished study by the present author (Krasner and Manstead, 1981), manipulations of the labels "severely MH", "moderately MH" and "above average intelligence" caused teachers to alter their perceptions, judgements and predictions for

the child's future achievement, regardless of whether the label was appropriate or inappropriate for the videotaped behaviour of the children they were watching. Thus, for example, the behaviour of a child with DS was rated positively and considered indicative of future success when he was labelled as being of "above average intelligence", but was rated as negative and illustrative of future problematic development when he was labelled as MH; likewise, the diagnostic manipulations were effective for a child with spina bifida and a "normal" child. Similarly, Burdick and Graham (1984) found that manipulation of the "developmentally delayed" label negatively affected children's test scores and performance ratings as determined by adult examiners. Severance and Gastrom (1977) also noted that the manipulations of children's labels led to adults attributing successful performance more to effort, if the child was labelled "mentally retarded" than to ability, which was considered a causative factor if the child was not so labelled. Similarly, a child's failure was more often attributed to her/his ability if s/he was labelled as "mentally retarded" than if s/he was not so labelled.

As stated earlier, however, little work has investigated the effects of diagnostic labels on the behaviour (as against expectancies) of adults towards infants/children thus labelled. Kurtz, Harrison, Neisworth and Jones (1977), however, observed that applying the label "mentally retarded" to a child resulted in altered nonverbal behaviour on the part of teachers in interaction with the labelled child. Similarly, Derby, (1977), in one of the few studies that looked at labelling effects on infants, investigated the behaviours of adults towards infants aged 3-4

months and who were labelled as "functionally gifted", "functionally average", or "functionally retarded", (all the infants were in fact, perfectly "normal"). The adults' behaviour suggested that they were interpreting that of the infants as being consistent with the label applied which, Derby argues, could result in the establishment of self-fulfilling prophecies.

This may be particularly the case if labelling occurs at birth, and thus has the potential to distort adults' perceptions from a very early age. Carr (1975), for example, observed that although the DS infants in her study actually weighed less than their CA matched "normal" controls, they were perceived by their mothers to be heavier. Such distortions in perceptions are, not suprisingly, often coupled with negative expectancies which appear to be characteristic of a MH, or perhaps specifically a DS stereotype. Jones (1980), for example, reported that the mothers of the DS infants in her study expected very little from their infants in the way of communication, and thus perceived interacting with their infants as "teaching", whilst mothers of "normal" infants tend to perceive this as enjoyment or play.

Despite arguments and results such as these briefly reviewed here, little work has been conducted with parents of DS children (or indeed, parents of MH children in general), apart from observations such as those made during longitudinal studies of DS infants like those of Carr (1975) and Jones (1980), as noted above. Given the evidence in the literature that adult expectations may under some circumstances affect children's success, and given also that in the case of DS, the potentially damaging label is applied at birth, thus giving plenty of time for any self-fulfilling prophecies to

materialise, it would seem important to investigate this more fully, particularly as DS children are without a doubt developmentally delayed to a significant degree (Dicks-Mireaux, 1972; Cunningham, 1978; Carr, 1975, etc.) and may thus be less able to counteract by their own behaviour any inappropriate expectations held for them. Furthermore, and given that above all else, language development in DS children is expected to be poor, both according to guidance manuals for parents (e.g. Lowenstein, 1978) and as Jones (1980) observed, as acknowledged by mothers even at a very early age when any retardation is difficult to observe, it would seem warranted to look specifically at mothers' expectancies and consequent perceptions of their DS children and at any relationship between these perceptions and the behaviour, specifically language behaviour, then directed towards DS children by these mothers. It could perhaps be argued that it is negative expectations and consequent distorted perceptions of their children that in part accounts for the evidence (contentious though it may be) of the "abnormal" nature of mothers speech to DS children.

The following experiments were thus designed to test these 2 hypotheses, specifically:

- (a) that mothers' perceptions of children will be affected by the applications of the diagnostic/intellectual label DS to a child, irrespective of that child's actual behaviour, and
- (b) that mothers' communicative behaviours will likewise be affected by the application of the diagnostic/intellectual label DS to a child, irrespective of that child's actual behaviour. (This latter hypothesis is examined in Chapter 3).

In the case of both experiments, the main focus of investigation is mothers of DS children. It is, of course, impossible to examine these hypotheses in the context of the mother-own DS child relationship, as it is impossible to measure the contribution of the child's own behaviour, and that of the whole prior relationship, to the interaction. Indeed, the ideal experiment, in every sense but the ethical and moral, would be to examine the development of a child falsely diagnosed as DS at birth. Given that, thankfully, such things cannot and do not occur, the following experiments represent an attempt to create similar situations, that is, situations where subjects are faced with a child whom they believe has DS but who is in fact "normal".

Experiment 1: to Investigate Mothers' Perceptions of Children Labelled "DS".

As stated, the aim of this experiment is to investigate mothers' perceptions of DS children, irrespective of the actual behaviour of these children. Thus a "normal" child, labelled as DS, was used for this experiment, the rationale being that if there is a peculiarity of behaviour associated with the DS condition, which alters or affects maternal perceptions, then a "normal" child, labelled as DS could not possibly show it. A comparison of mothers' perceptions of a specific child labelled as DS with those of mothers who see the child without the label applied should thus give some indication of the effect of the label per se.

The effects of stereotypic expectancies on perceptions are discussed with reference to the theoretical literature more fully in Chapter 3. Suffice to note here that reference to attribution theory suggests that stereotypes result in people "seeing" evidence

which confirms their stereotyped beliefs and "not seeing" incongruent evidence, (Hamilton, 1979). Thus it is hypothesised that when confronted with a DS-labelled child, mothers will perceive and encode her behaviour in a way which confirms their negative DS stereotype, but when no such "stereotype cue" is present, i.e. when the child they witness is not labelled as DS, then they will perceive and encode information congruent with their (more positive) attitudes towards "normal" children. In this sense, therefore, differences in perceptions are seen as reflecting the underlying attitudes of the subjects concerned, attitudes being defined here, as within mainstream social psychological literature, as "relatively enduring organizations of feelings, beliefs and behaviour tendencies towards other persons, groups, ideas or objects", (Baron and Byrne, 1977). It is thus considered appropriate to measure any "attitudinally or stereotypically induced encoding bias" (see Chapter 3) and its concomitant effect on perception with the use of rating scales, as have been used in various forms and with much success in attitude measurement for over 50 years (e.g. Thurstone and Chave, 1929).

2.2 Method

2.2.1 Apparatus

Sony portable black and white video tape recorder and camera;
Sony 9 inch portable black and white monitor.

2.2.2 Materials

(a) Video Recording

Three video recordings were constructed, using the above equipment, of 3 "normal" mother-infant dyads at play in their own homes. One of these videos, for reasons which will be discussed below, (see Chapter 7) became irrelevant, and thus this experiment will refer to and discuss only two. Both infants were within 10 days of their 6 month birthday and were from similar socioeconomic backgrounds and were dressed similarly. In both cases, when making the recordings, the camera was kept focused on the infants, involving the mother in the recording only peripherally. To make up the experimental video film, a 5 minute section of each video was edited, which, in both cases, involved the infant playing first with a selection of her own toys and then with toys provided by the Experimenter (a large rattle and a set of multi-coloured stacking cups).

(b) Questionnaire

A questionnaire was designed to measure attitudes to and opinions of the children on the experimental video film. This consisted of ten 7-point rating scales, measuring judgements of the child's (i) attentiveness, (ii) vocal ability, (iii) sociability, (iv) manipulative skills, (v) understanding of mother, (vi) physical development, (vii) happiness, (viii) interest in mother, (ix) physical attractiveness, and (x) future general development. (These 10 scales were chosen by asking independent subjects to describe the behaviours of the children on the films and by asking them what they

regarded as important infant behaviours, and why, and also with reference to the relevant literature).

2.2.3 Pilot Study/Assignment of "Labels"

(i) Assessment of Infants

Both the infants involved on the video were assessed using the Bayley Scales of Infant Development (BSID). Infant 1 was found to have a BSID Mental Development Index of 130, and Infant 2, one of 121.

(ii) Pilot Subjects

Nine women, 7 of whom had children, the remaining 2 having had considerable experience with young children through their extended families.

(iii) Method

Each pilot subject viewed the video, and at the end of each of the 5 minute mother-infant sessions, she completed the questionnaire. (Four subjects saw Infant 1 first and five, Infant 2 first).

(iv) Results

The subjects' mean ratings for each child were calculated, and a t-test revealed that the children had not been judged to be significantly different, although there was a (non-significant) trend to perceive Infant 1 (whose BSID score was the higher of the 2), as more able.

(v) Assignment of "Labels"

For the purposes of this experiment, Infant 1 (whose BSID score was the higher of the 2 and who had been judged by the pilot subjects to be the slightly more able infant) was given the label "Down's Syndrome", and Infant 2 was described as "normal".

Ideally, of course, if attitudes to the 2 children are to be compared in order to ascertain the effects of the label DS, then it would be preferable to compare them to the same child, once when labelled and once when not labelled. However, such a manipulation would evidently fail as subjects would recognise the infant and so disbelieve the label. It was therefore decided to weight the experiment in favour of perceiving the DS-labelled child as brighter. That is, by choosing the child with the higher BSID and who was perceived as brighter by the pilot subjects to be the DS labelled child, it could not be argued then that this child was perceived as more like a DS child simply because of her lower competence.

2.2.4 Subjects

Subjects consisted of 3 groups of mothers of preschool children matched for social class and number and positioning of preschoolers' siblings as shown in the Appendix, Table A.1.

Group 1

12 mothers of preschool children with Down's Syndrome.

Group 2

12 mothers of preschool, non-handicapped children.

Group 3

12 mothers of preschool, non-handicapped children.

2.2.5 Procedure

The video was shown to all subjects in all 3 groups. Subjects in Groups 1 and 2 saw the video in their own homes, whilst for practical reasons, approximately two-thirds of Group 3 saw the video in their children's playgroup, and the other third of this group viewed the video in a private house. In all cases, the subjects completed the questionnaire after each of the video sections.

Groups 1 and 2

Groups 1 and 2 were told the following before the video was shown:

"I am going to show you 2 films, each of an infant and mother playing together. Both infants are 6 months old. At the end of the first film (which lasts 5 minutes), I would like you to fill out the first half of the questionnaire, headed 'First Child'. You will then see the film of the second mother-child pair, which again, lasts 5 minutes. At the end of that I would like you to fill out the second part of the questionnaire, which involves identical questions to the first, but is headed 'Second Child'.

"The first child you will see has DS (mongolism)

OR*

"The first child you will see is a perfectly normal, healthy child with no physical or mental handicaps.

"The second child has DS (mongolism)

OR*

"The second child is a perfectly normal, healthy child with no physical or mental handicaps."

(*Depending on order of presentation).

As stated earlier, the child described as having DS was always Infant 1, but the order of presentation of the 2 video sections was reversed for half the subjects in each group. For both these groups, the diagnostic/intellectual labels were repeated directly before they saw each video section.

Group 3

To control for any comparison demand characteristics intrinsic to the methodology used for Groups 1 and 2, a third group of subjects were told the following before they saw the video and completed the questionnaires:

"I am interested in the differences which exist between infants even at an early age. I am going to show you 2 films, each of a 6 month old infant playing with her mother. Although both the infants are normal, healthy 6 month olds, there are obviously differences between them, and it is your judgements of these differences that I would like to examine.

"At the end of the first film, (which lasts 5 minutes), I would like you to complete the first part of the questionnaire, headed 'First Child', and at the end of the second film, to complete the second part of the questionnaire, headed 'Second Child'. The questions in both parts of the questionnaire are identical."

2.3 Results

The data for the 3 groups of mothers were collated (see Appendix, Table A.2) and for each of the 10 rating scales, for each subject, the rating given to the second child (or "normal" child for Groups 1 and 2) was subtracted from that given to the first child (or "DS" child for Groups 1 and 2), to give a measure of the labelling effect. The 3 groups of mothers' "labelling effects" were then compared using an analysis of variance (Groups of Mothers x Rating Labelling Effects). This analysis revealed the following relevant significant main effects and interactions: a significant

main effect of Groups of Mothers ($F = 16.4201$, with 2 and 33 d.f., $p < 0.0001$) and a significant Groups of Mothers x Rating Labelling Effects interaction ($F = 2.9385$ with 18 and 297 d.f., $p < 0.001$). The main effect of Rating Labelling Effects was also statistically significant but this is not of theoretical relevance to the hypothesis being examined here. These data are summarised in Table 2.1 below.

TABLE 2.1: Mean values for Groups of Mothers x Rating Labelling Effects Interaction.

(It should be noted that a negative value indicates that the rating given to the "DS"-labelled or first child was lower than that given to the "normal"-labelled or second child).

Rating Scales	Group 1	Group 2	Group 3
Attentiveness	-0.167	-1.333	0.917
Vocal Ability	-1.917	-1.000	-0.667
Sociability	0.083	-1.000	0.500
Manipulative Skills	0.000	-1.167	1.417
Understanding	-0.333	-0.750	0.917
Physical Development	-0.167	-0.225	1.500
Happiness	-0.417	-0.250	0.333
Interest in Mother	0.000	-0.917	0.333
Physical Attractiveness	0.000	-0.500	0.583
Future Development	-0.583	-1.250	0.583
Overall Means	-0.350	-0.842	0.642

These data were further examined using Tukey's HSD test for post-hoc comparisons of means. The Groups of Mothers x Ratings Labelling Effects interaction means yielded Tukey values of 0.70 at the 5% level and 0.92 at the 1% level. The significant comparisons can be summarised as follows: Group 1 mothers mean rating labelling effects differed significantly from those of the Group 3 (no labels

condition) mothers on all rating scales except for Sociability, Interest in Mothers and Physical Attractiveness. Moreover, all the other comparisons were significant at the 1% level, except for Happiness, which was significant at the 5% level. Group 1 means differed significantly from those of Group 2 within the rating scales of Attentiveness ($p < 0.01$), Vocal Ability ($p < 0.01$), Sociability ($p < 0.01$), Manipulative Skills ($p < 0.01$) and Interest in Mother ($p < 0.01$).

Group 2 mothers mean rating labelling effects differed significantly from those of Group 3 on all rating scales but those of Vocal Ability and Happiness. In all cases, these comparisons were significant at the 1% level.

(No comparisons were made of differences between different Rating Labelling Effects means within Groups of Mothers, as this was not relevant to the present investigation).

2.4 Discussion

The results thus suggest that manipulation of the DS diagnostic/intellectual label can affect mothers' perceptions of that child. Before discussing this further, it must first be considered as to whether these results could have been generated by extraneous, uncontrolled variables, rather than by the manipulation of the labels applied to the children.

It could be argued that intrinsic to the method used here of rating two separate children is that of comparison, thus making it more likely that one be judged more positively than the other.

The experimental instructions given to Group 3 (the control, unlabelled condition) were designed to circumvent this possibility

by creating an equally demanding notion of comparison. Had the experimental result been simply a product of the intrinsic demand characteristics for comparison, then Group 3 should have shown similar results in the same direction. Instead, as will be seen from Table 2.1, Group 3's mean difference was in the opposite direction to that of the 2 experimental groups, (i.e. subtracting Infant 2's ("normal") ratings from those of Infant 1 ("DS"), Group 1 showed a mean group difference of -0.35 , Group 2 was -0.842 , but Group 3 showed $+0.642$).

It could be argued, however, that mothers in Groups 1 and 2 feel obliged to demonstrate their knowledge of the stereotypical reality of DS, and so "mark down" the DS labelled child, even if they do not actually perceive her as less able. If this were the complete explanation for the observed effect, then it might be expected that this would be equally observed in both Groups 1 and 2. Instead, as will be discussed in detail below, on specific rating scales, the 2 Groups judge the infants very differently, thus suggesting that the effect is due to more than simply an Experimenter Demand to mark down the DS labelled child.

Indeed to some extent, the experience of having a DS child seems to mitigate the effect of the stereotype. As reference to Table 2.1 will illustrate, Group 2 mothers show greater mean "labelling effects" than Group 1 mothers for all ratings but those of Vocal Ability and Happiness, and in the cases of Attentiveness, Sociability, Manipulative Skills and Interest in Mother, Group 2 mothers' ratings of the DS labelled child are highly significantly more negative than are those given to this child by the mothers of DS children. Indeed, this mitigating effect is perhaps most clearly

exemplified by the Future Development rating scale.

This scale is perhaps the one most likely to engender a labelling effect based on perceived demand characteristics as it relates specifically to subjects' knowledge of the retardation associated with DS, rather than to their present impressions of the videotaped infant. It is thus interesting to observe that whilst both Groups 1 and 2 demonstrate a highly significant negative labelling effect in their ratings of the DS-labelled infant ($p < 0.01$), this effect is larger in Group 2 than in Group 1 and this difference approaches, although does not quite reach statistical significance (it being 0.667, with the critical Tukey value being 0.70). In some cases, therefore, any negative expectancy and its consequent effect on perception is perhaps softened by experience with DS children.

Nevertheless, notwithstanding methodological considerations and bearing in mind the discussed differential effects shown by the 2 Groups of Mothers on various ratings, the "DS" label can be said to exert a strong negative effect on mothers' ratings of infants thus labelled, even when the behaviour of the infants they are witnessing is in every way "normal". This raises the question of whether this negative effect would be enhanced in a situation where to some extent, the stereotype or negative expectancy is based on reality - i.e. when mothers are confronted with "real" DS children. Reference to the "Vocal Ability" ratings gives some indication of this. In Group 3, only the "Vocal Ability" ratings showed a negative effect - a difference in favour of Infant 2 (i.e. the "normal" child). Thus on this Vocal Ability scale, the so-called "DS" infant, as presented to Groups 1 and 2, appeared less able than

the "normal" infant, a situation more like that presented by a "real" DS infant who may to some extent confirm the stereotype of being vocally retarded. In this case, whilst both Groups 1 and 2 rated the so-called DS child as worse than the "normal" infant, the effect was only significantly different from that of Group 3 in the mothers of the DS children (see Table 2.1). This suggests that perhaps the actual behaviour of DS children would interact with mothers' stereotyped beliefs not only to mitigate some of the negative expectancy effects, but also to reinforce, if not to enhance others, if and when the children's behaviour confirms any element of this stereotype. Further studies are thus needed wherein the less able, but still nonhandicapped infant is labelled "DS", within a balanced design, to ascertain whether any negative expectancy or labelling effect thus engendered is stronger than that observed in this present experiment.

2.5 Conclusions

This study thus demonstrates that mothers' ratings of children are significantly affected by the application of the "DS" label to a child, even when that child is exhibiting perfectly "normal" behaviour. Whilst both methodological considerations and the interaction between mothers' experience of DS children and the complexities of their susceptibility to negative expectancy effects is acknowledged, the overall strength of the negative effect engendered raises the question of how mothers' behaviour, and in particular, their communicative behaviour, might be affected by the "DS" label. This is more fully examined in the next chapter.

CHAPTER THREE

THE EFFECT OF THE DS LABEL ON MOTHERS' INTERACTIVE BEHAVIOUR

3.1 Introduction

As the introduction to the previous experiment indicated, little work has examined the effect of the diagnostic/intellectual label "DS" on the behaviour of the mothers of DS children. As several studies, including the previous experiment reported here, have indicated that the label DS can exert an effect on mothers' attitudes and perceptions of children thus labelled, the following experiment was conducted to investigate such effects on actual behaviour. Specifically, it was hypothesised that the behaviour of mothers towards a child described as "DS" would differ significantly from that towards a similar child not so described, or described as "normal", irrespective of the children's actual behaviour.

3.2 Method

3.2.1 Apparatus

Sony 1/2" black and white audio video recorder and camera; portable (audio) cassette recorder.

A selection of preschool toys (e.g. jigsaws, "lego", "sticklebricks", dominoes, building blocks, construction hexagons, etc.).

3.2.2 Subjects

The experimental subjects were 11 of the mothers of DS children also used in the previous experiment, (one of the subjects used in this previous study dropped out between that experiment and the study presented here). Two 4 year old children with no known intellectual, physical or sensory impairments were also used in this experiment. They were non-identical twin sisters, called H and S, S

being slightly taller and more heavily built than her sister, and with a higher verbal IQ (as measured by the English Picture Vocabulary Test), although both girls functioned at an above average level. None of the experimental subjects had ever seen either of the twins before.

3.2.3 Procedure

The experiment was conducted in the Psychology Department. In each subject's case, both mother and child came to the department, ostensibly to participate in a study investigating DS children's language abilities in strange (i.e. unknown) situations and with strange (i.e. unknown) children and adults. The need for DS children to be able to communicate in situations such as these was discussed by the Experimenter with the mothers, particularly in view of the trend to mainstream DS children, at least at the pre-school level (a topic which was repeatedly discussed by these mothers during the Experimenter's visits to the children in their own homes; to be reported later).

Once the Experimenter felt that both mother and child were relaxed in the environment of the Psychology Department (a process which took between 30 and 90 minutes and several cups of coffee), she explained that as she (i.e. the Experimenter) had repeatedly met X (the DS child present) the child's communication with "strange" children and adults would be judged by an assistant, whilst the mother was asked whether she would help in a second experiment in the adjacent room by being the "strange (unknown) adult" to two children she had never before met.

These children, it was explained, were twins, one having DS and the other being perfectly "normal". The mother's task was to spend 10 minutes with each child in turn, whilst they were being videorecorded, playing with a selection of toys, and simply to get each child to relax, chatter and "be herself" as much as possible, thus enabling a direct comparison to be made between normal and DS children in that particular situation. To all the subjects, S (with the higher verbal I.Q.) was described as the DS sister and H as the "normal" sister, but 6 subjects played and were recorded first with S and then with H, whilst for the remaining 5, the order was reversed. (It was not possible to exchange the labels applied to S and H as the results were to be used for a study outside of this experiment, assessing individual differences between mothers). In every case, the mother was recorded for 10 minutes with each of the children in a "free play" (i.e. undirected) situation with as many or as few of the toys available in the room as she saw fit. During each of these 10 minute sessions, the other twin stayed in the room with the DS child and the assistant, ostensibly participating in an experiment. At the end of the sessions, the mother stayed with the Experimenter, whilst all the children (including the mother's own daughter) played together in the adjacent room, again ostensibly so that her daughter could be observed in interaction with 2 unknown children.

The Experimenter then asked the mother what she had thought of H and S and what she saw as the main differences - if any - between them. The mother's responses were recorded.

The mother was then fully debriefed about the nature of the experiment and its purpose and taken into the adjacent room to

discuss it more fully, to enable her to voice any criticisms and/or praise, and to request that for the time being, she did not discuss its true nature or the true "status" of the twin sisters with anyone else who might be participating in the study.

The Experimenter then once again spent time chatting and drinking coffee with the mother to ensure she was at her ease (again a process of varying lengths of time depending on the individual subject). Mother and child were then taken back into the "recording room" (as used in the earlier experiment) and the mother was again recorded at "free play", this time with her own child. (For the results of these latter mothers and own DS children recordings, see Chapter 5).

3.3 Results

analysis of Mothers' Interactions with Twin S (DS Labelled) and Twin H (Normal Labelled)

3.3.1 Categories Used

Reference to the review in the introductory chapter will illustrate that several aspects of maternal speech to DS children have been found to be different from that directed towards "normal" children. As discussed, these results are to some extent contentious, not the least because it is unknown whether they are a positive and accurate adaptation to the child's own language level (that is, whether they are child elicited), or whether they are peculiar to the speech of mothers of DS children, regardless of the actual behaviour exhibited by the children (that is, whether they are mother elicited).

Thus the categories for analyses selected here were drawn from the findings in the literature on maternal speech to DS children.

It was hypothesised that if any such differences were child elicited, then they would not be manifest in the experimental situation wherein a (supposed) DS child would be exhibiting perfectly normal behaviour. Conversely, if any such differences are mother-elicited, then, it was hypothesised, they would manifest themselves even when confronted by "normal" behaviour, as shown by the DS-labelled child. However, it is also possible that an interaction between 2 such effects would occur; that is, that mothers would initially manifest certain such differences (for whatever reasons - be this through their experiences with their own DS child or through certain preconceptions they hold, or both) but that such behaviours only endure when maintained by the child's own behaviour. Thus when confronted by "normal" behaviour, any effects should gradually decline. It was therefore decided to compare not only mothers' behaviours to the DS-labelled twin versus the normal-labelled twin, but also, within each of these categories, to compare results over the first 3 minutes of interaction as against the second 7 minute period of interaction. This was done within the following categories:

(a) Amount of Vocalization

It has been noted by several researchers (e.g. Buckhalt et al, 1978; Buium et al, 1974; Petersen and Sherrod, 1982) that mothers of DS children talk more to their children than do mothers of nonhandicapped mothers to theirs. The amount of productive vocalisation shown by the mothers to the twins was thus measured by recording the amount of time each mother spent vocalising, and this was expressed as a percentage of either the early (3 minute) period or the later (7 minute) period.

(b) Commands

Several studies have also found mothers of DS children to be more directive (e.g. Buium et al, 1974; Petersen and Sherrod, 1982; Wolf, 1975; Stoneman et al, 1983, etc.). Within this experiment, this was firstly investigated by observing the number of (i) positive commands, and (ii) negative commands/prohibitions used by subjects to the twins. These were counted within the early and late periods of the interaction sequences, and the number of commands were expressed as a proportion of the total amount of vocalisation within each period (as measured in category (a), above).

(c) Offering Toys

Again with reference to the findings on maternal directiveness when in interaction with their DS child, and also with reference to studies indicating mothers' reluctance to allow handicapped children to initiate toy play (e.g. Brooks-Gunn and Lewis, 1982) the number of times each mother offered toys to the children, regardless of the child's response, was calculated as an index of the extent to which they directed play sequences. The number of toy-offers was again counted in both early and late periods within each interaction sequence.

(d) Imitation

It has been observed (e.g. Petersen and Sherrod, 1982) that mothers of DS children seek more imitation from their preschooler children than do "normal" controls. Thus the number of times mothers sought imitation from the twins was counted, again within the early and later periods of the interactions. Imitation is defined here as mothers requesting a child to repeat a word/words.

(e) Interrogatives

Greater syntactic complexity has also been noted in the speech of mothers to "normal" children than to DS children. In particular, it has been observed (e.g. Buium et al, 1974) that mothers of DS children have a less complex interrogative form than do "normal" controls, in that they use fewer "Wh-" type questions. To investigate this, mothers' use of (i) simple interrogatives (i.e. those requiring only a yes/no answer as an appropriate response), and (ii) complex interrogatives (i.e. "Wh-" questions requiring more complex responses) were counted to both twins and within the early and late periods of each interaction, and this was then expressed as a proportion of the total amount of vocalisation for each period (as measured in category (a) above).

(f) Unresponsiveness

Literature on maternal communication to DS children also indicates that mothers are less responsive to their handicapped children's initiations of interactions (e.g. Eheart, 1982; C.E. Cunningham et al, 1981) and also that they are involved in less semantically-related child dependent speech than their "normal" peers (Petersen and Sherrod, 1982). Thus, the number of times the twins either initiated, or attempted to initiate a new conversation was noted, and the number of these that mothers ignored was likewise noted. These latter figures were then expressed as a proportion of the number of child initiations, or attempted initiations within each period of the interaction sequences.

Inter-Observer Reliability

One 10-minute videotape was randomly selected of one of the mothers with one of the twin sisters. This was divided into 10 x 1 minute sections, using an electronic "bleeper". An independent observer analysed each one minute section, using the above behaviour categories, and inter-observer correlations were calculated between the independent observer's analysis and those of the Experimenter. Inter-observer reliability coefficients were found to range from $r = 0.80$ to $r = 1.00$, with a mean of 0.86 . (These inter-observer reliability coefficients were not calculated for the categories of negative commands and imitation as these occurred so infrequently).

3.3.2 Results

Of the above categories, 2 proved to be inappropriate for analysis. The first of these was category (bii) - negative commands. No subjects used any negative commands or prohibitions whatsoever. The second of these 2 categories was category (d) - imitation. The amount of imitation sought was negligible, and thus did not lend itself to analysis. The data from the remaining 6 categories is presented in Tables 3.1 and 3.2 and in the Appendix, Tables A.3 and A.4 (see also Fig. 3.1, Graphs a-f). These remaining 6 categories were analysed using a repeated measures analysis of variance (labels x categories x periods). As categories of positive commands, simple interrogatives and complex interrogatives are all expressed as proportions of the total amounts of vocalisation, they are not independent of this latter category and were thus examined in one ANOVA, with the remaining categories of vocalisation, offering toys and responsiveness, being analysed in another ANOVA.

ANOVA 1 (Vocalisation, Offering Toys, Unresponsiveness)

This ANOVA (see Table 3.1) found firstly a statistically significant main effect for Categories. However, as the 3 categories here are independent and measured in different units, such a result is meaningless on all but a statistical level. Of more interest, the labels x categories interaction was found to be highly significant ($F = 8.8852$, with 20 d.f., $0.001 < p < 0.002$). No other significant main effects or interactions were found in this ANOVA.

Post hoc analyses were then conducted to more fully examine the labels x categories interaction (See Fig 3.1); Tukey's HSD test yielded a value of q of 7.90 at the 5% level and 10.73 at the 1% level. Multiple comparisons between the 2 labels, for each category thus reveal that the labelling factor only has an effect at the level of the Unresponsiveness category ($p < 0.01$); there was no effect for the Vocalisation or Offering Toys categories.

However, whilst the use of analyses of variance reduces the chance of making a Type 1 error, as associated with the multiple use of single comparison tests, such as repeated t-tests, given that this specific ANOVA embodied categories of very different scales, it was hypothesised that a Type 2 error could have occurred due to the very low numbers of the Offering Toys category spuriously affecting the mean square error term and thus producing an inappropriately conservative test. T-tests for correlated samples were thus conducted on the data for the 3 categories when it was confirmed that an insignificant difference did indeed exist between mothers' offering of toys to the 2 children ($t = 0.93$ with 10 d.f., $p > 0.05$) but amounts of maternal vocalisation were found to be significantly

TABLE 3.1: MEANS FOR ANOVA 1

		LB ₁						LB ₂					
		CT ₁		CT ₂		CT ₃		CT ₁		CT ₂		CT ₃	
		PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂
MEAN		21.6	16.1	1.3	0.9	24.3	33.8	26.1	24.8	1.2	1.5	16.8	19.1
SD		10.9	7.5	0.9	1.1	28.3	19.8	10.6	9.7	0.9	1.4	21.5	14.7

TABLE 3.2: DATA FOR ANOVA 2

		LB ₁						LB ₂					
		CT ₄		CT ₅		CT ₆		CT ₄		CT ₅		CT ₆	
		PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂	PD ₁	PD ₂
MEAN		5.1	6.7	18.7	17	6.1	8.9	4.7	4.5	13	10.4	15.1	10.7
SD		4.8	4.7	9.1	12.6	5.9	6.4	4.0	2.1	64	5.5	8.3	6.9

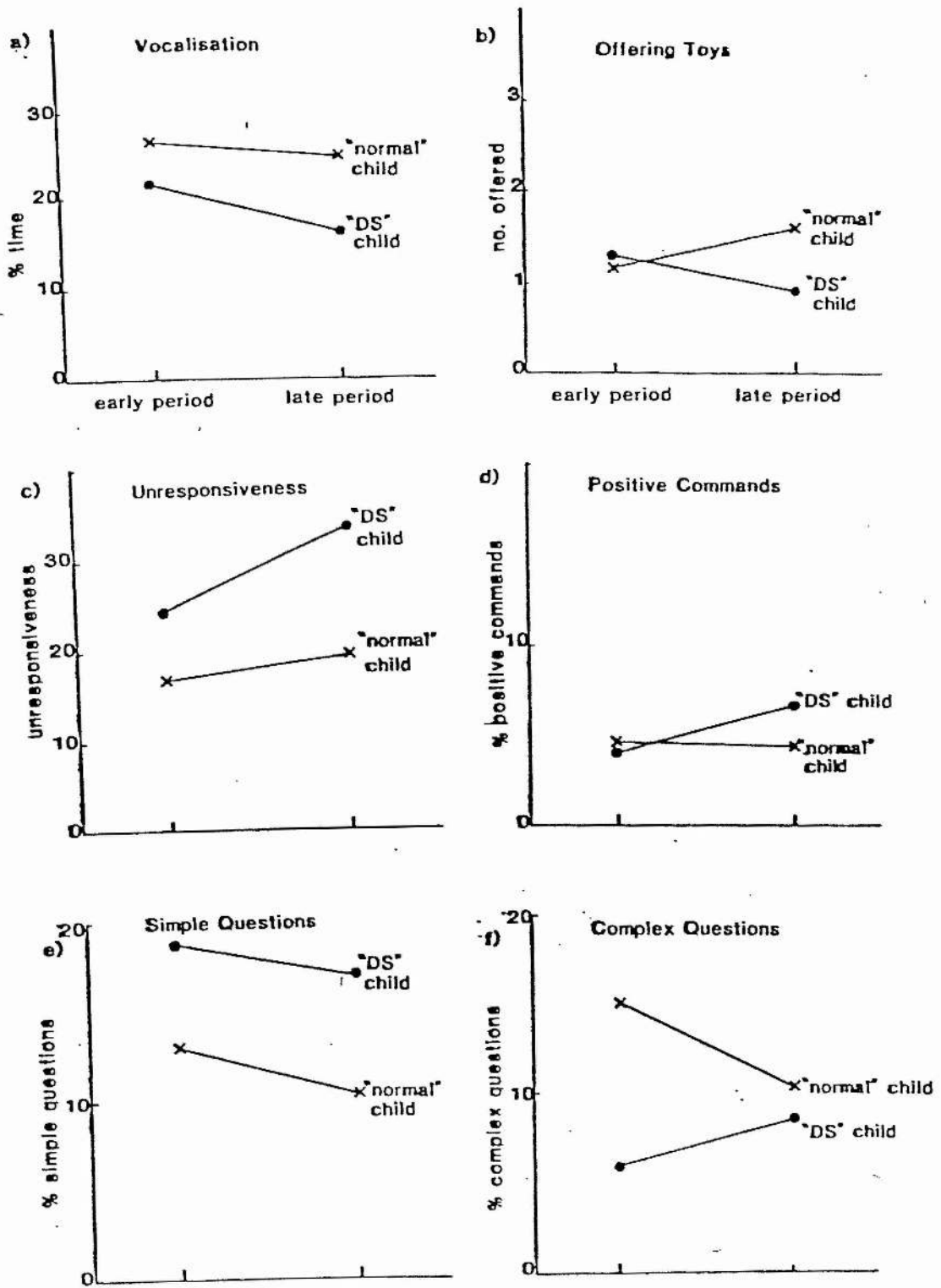
KEY

LB₁ = DS-Labelled Child
 LB₂ = Normal-Labelled Child
 CT₁ = Vocalisation

CT₂ = Offering Toys
 CT₃ = Unresponsiveness
 CT₄ = Positive Commands

CT₅ = Simple Interrogatives
 CT₆ = Complex Interrogatives
 PD₁ = Early Period
 PD₂ = Later Period

Fig. 3.1 Labels x Categories x Period comparisons.



greater to the normal-labelled child than to the DS-labelled child ($t = 2.228$ with 10 d.f., $p < 0.01$). Even allowing for the unconservative nature of conducting repeated t-tests, the magnitude of this latter result suggests a true level of significance erroneously masked in the ANOVA, as explained above.

ANOVA 2 (Positive Commands, Simple Interrogatives, Complex Interrogatives).

This ANOVA firstly found a statistically significant main effect for Categories ($F = 10.8226$, with 20 d.f., $p < 0.001$). Again, insofar as this experiment is concerned, this result is meaningless on all but a statistical level.

The label x categories interaction was found to be highly significant ($F = 8.8910$, with 20 d.f., $0.001 < 0.002$). Post hoc analyses of this interaction (see Fig. 3.2), using Tukey's HSD test were again conducted. For the labelling factor, this yielded a q value of 5.10 at the 5% level, and multiple comparisons thus revealed that this factor had a significant effect at the levels of both Category 5 ($p < 0.05$) and Category 6 ($p < 0.05$), that is, Simple Interrogatives and Complex Interrogatives respectively.

For the Categories factor, Tukey's HSD yielded a q value of 6.04 at the 5% level and 8.23 at the 1% level. Multiple comparisons thus revealed significant differences between Categories 4 (Positive Commands) and 5 (Simple Interrogatives) within level 1 of the labelling factor ($p < 0.01$), and between Categories 5 and 6 (Complex Interrogatives) within this same level of the labelling factor ($p < 0.01$).

Within level 2 of the labelling factor, multiple comparisons revealed that Categories 4 and 5 differed significantly ($p < 0.05$),

and categories 4 and 6 ($p < 0.01$). No other significant differences existed.

The label x period interaction (see Fig. 3.3) was also found to be significant ($F = 5.9623$ with 10 d.f., $p < 0.05$). Post hoc comparisons of means were conducted using Tukey's HSD test. This yielded an HSD value of 2.15 at the 5% level of significance. Thus within level 2 of the labelling factor (the "normal" label) there existed a significant difference between the means for Periods 1 and 2 ($p < 0.05$); within Period 2, there likewise exists a significant difference between the mean values for Labels 1 and 2 ($p < 0.05$).

There were no other significant main effects or interactions.

Fig. 3.2 Labels x Categories comparisons.

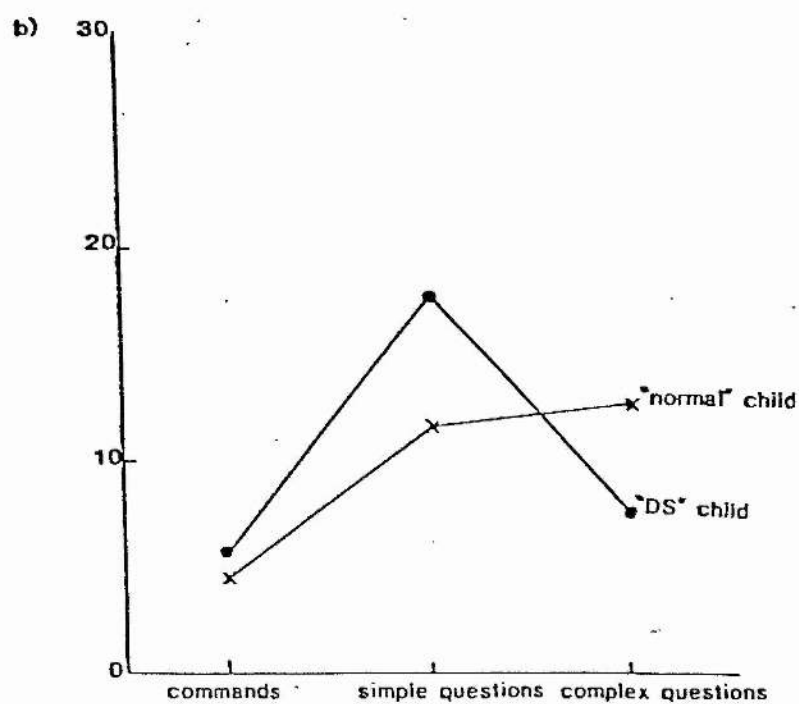
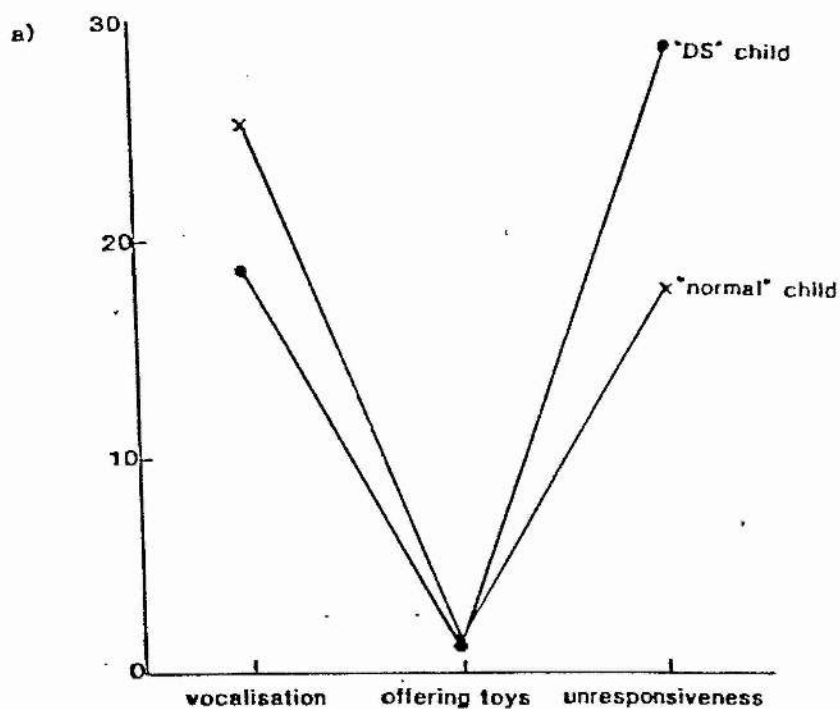
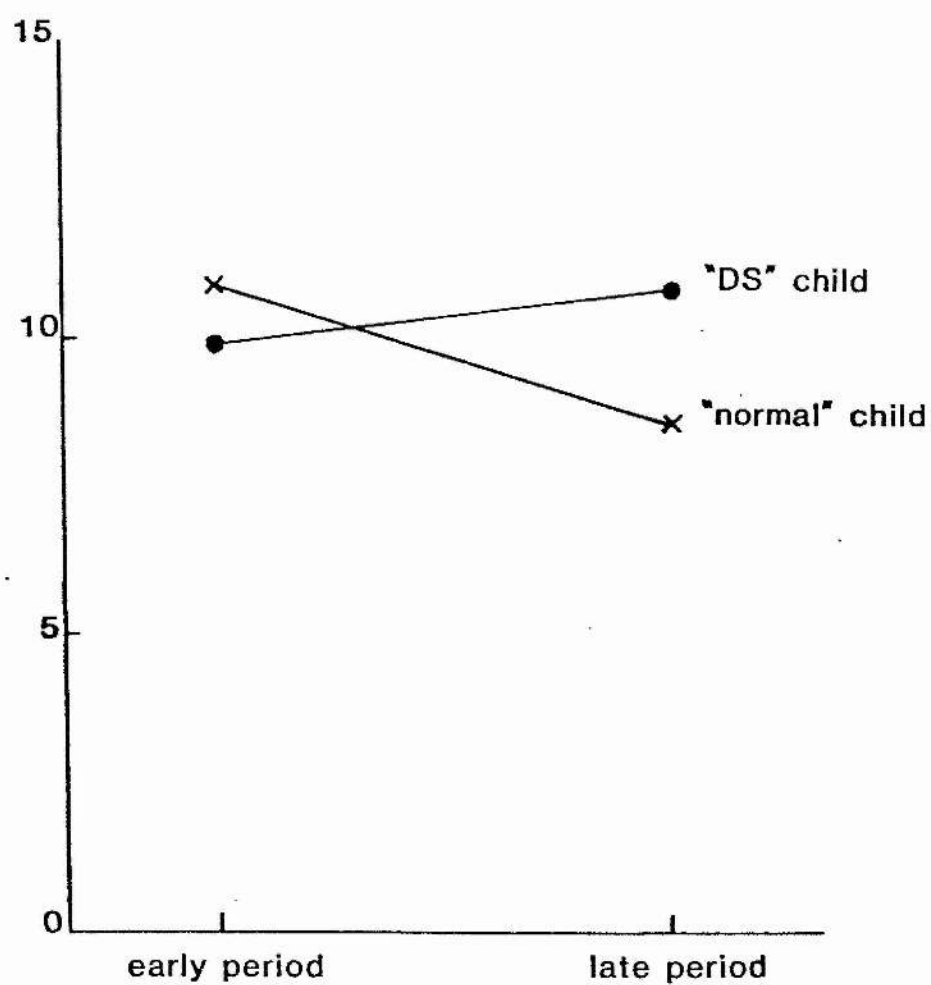


Fig. 3.3 Labels x Period comparisons.



3.3.3 Discussion

The results of the first ANOVA thus show that mothers are significantly less responsive (in that they ignore more attempts to start interactions) towards a child whom they think has DS than towards a child whom they believe is "normal". This is in many ways very similar to the findings in the literature of maternal speech to DS children (and also MH children generally), in that as reported above, several researchers have found mothers to be less responsive to their handicapped children (e.g. Eheart, 1982; C.E. Cunningham et al, 1981), and that their speech was less child dependent than is found in that of mothers to nonhandicapped children. To some extent, this overlaps with maternal directiveness, in that ignoring the child's initiations ensures that interactions are determined (or directed) by the mothers. However, the results of the other measures of directiveness analysed here, namely Commands and Offering Toys, do not replicate the findings in this area. It is perhaps not surprising that mothers used no negative commands whatsoever: within a laboratory setting, however relaxed a subject might be, it is still unlikely that she would be sufficiently disinhibited to allow herself to use prohibitions or negative commands to children she had never met before, in front of "The Psychologist" and whilst being video-recorded. Nevertheless, subjects did use positive commands, and whilst the analysis (ANOVA 2) revealed no significant differences between the amount used to the DS-labelled child and that to the normal-labelled child, there was a non-significant trend to use more of such positive directives to the DS-labelled child which arguably enhances (albeit statistically insignificantly) the picture of the more directive

communication being aimed at a DS (or in this case, DS-labelled) child. However, the fact that this finding did not reach significance perhaps suggests that in "real" DS children the children's behaviour actually demands some greater directiveness than does that of a normal child and thus, to some degree, Twin S's "normal" behaviour was allowed to negate some of this effect. Indeed, insofar as the Offering Toys category is concerned, whilst once again no significant effects of the differently labelled twins could be found, by the latter part of the interaction (Period 2) there is actually an insignificant trend to offer more toys to Twin H - that is, to be slightly more directive with her than with her sister.

There is a significant trend for mothers to vocalise more to Twin H (the "normal" twin) than to Twin S (the "DS" twin). This is a reversal of the findings in the DS literature in this area, wherein mothers are more productive with DS children than with "normal" children. Thus once again, it could perhaps be argued that this reported extra speech production is in response to a deficit in the DS child's communicative behaviour and not so much of a stereotypic response, in that when confronted by "normal" behaviour, as in Twin S, mothers do not show this response and indeed, it is reversed. The reasons for this reversal could be two-fold: either S's behaviour simply negated the usual response of mothers to talk more to DS children than to "normal" children, or alternatively, the stereotypic response could be to talk less to DS than to "normal" children, a stereotype which is negated by DS children's poor communicative capabilities, so that mothers need to be more productive with them and also by intervention programmes and parent

guides, which stress the need for constant stimulation of DS children, including speech stimulation.

The lack of imitation sought by subjects from either of the 2 girls could again be explained in several ways. It could be that S's language skills were so good that the opportunity did not arise wherein mothers could demand that she imitate. Alternatively, perhaps, this response was subdued by the methodology used: if mothers feel that seeking imitation is specifically part of "teaching" rather than simply "playing", then they might have thought it inappropriate to use it in the particular experimental situation. Insofar as the use of interrogatives is concerned, the total proportions of interrogatives used by mothers to the 2 girls is almost identical: the mean proportion of mothers' speech filled by interrogatives for Twin S (the DS labelled twin) was 50.73, whilst for the normal-labelled twin (Twin H) it was 49.16. However, mothers asked significantly more simple interrogatives of the DS-labelled child than of the normal-labelled child, and significantly more complex interrogatives of the normal-labelled child than of the DS labelled child. Thus at this arguably rather more subtle level, than, say, Offering Toys, mothers appear to have a similar overall structure to their speech to both children: a high proportion of the amount of speech is in the questions put to both H and S. However, within this similarity, the questions are to the one child complex and so maximally demanding and to the other, they are mainly simple and so demand little.

The absence of any significant period x label x category interaction in either ANOVA suggests that these differences do not diminish significantly over time, despite the likelihood that

mothers would get more of an idea of the children's true interactive capabilities. Reference to Fig. 3.1, Graph (f), however, suggests that, albeit at an insignificant level, the differential use of complex interrogatives to the 2 girls does appear to diminish over time, although the difference in the use of simple interrogatives does not change. However, this trend is insignificant and overall, there is little evidence to suggest that these behaviours which, according to this evidence, appear to be elicited in response to the diagnostic/intellectual label DS are adapted to or can be malleated by their recipients. Indeed, within the first ANOVA, there is a trend, albeit insignificant, for mothers to become more unresponsive over time towards the DS-labelled child (see Fig. 3.1, Graph (c)). Within the second ANOVA, the interaction periods x labels is significant, and as Fig. 3.3 and the post hoc comparisons illustrate, there is a suggestion that categories 4-6 represent a smaller proportion of mothers' speech to the normal-labelled child over time whilst their speech style to the DS labelled child does not alter significantly with time. The absence of any significant category x label x period interaction suggests that this finding could be due to a factor not accounted for in this ANOVA: perhaps as time progresses mothers spend a greater proportion of their speech time in conversational response (which is neither questioning nor commanding) to the normal-labelled child's initiations of interactions, whilst as the ANOVA 1 and Fig. 3.1, Graph (c) illustrate there is an insignificant trend for mothers to actually ignore progressively more of the DS-labelled child's initiations as time progresses; thus they maintain and perhaps slightly increase (albeit insignificantly) this more directive style, with a high

proportion of interrogatives and commands.

It could be argued, however, that all the significant findings here occur merely in response to Twin S herself. Such a possibility would have been avoided had it been possible to use a fully balanced design, that is, with half the mothers seeing S as the DS child and half seeing her as the normal child. Such a design, however, was not possible as this would not enable comparisons to be made, in a subsequent study (Chapter 5), between individual mothers (as explained above). Twin S was thus selected of the two girls to be labelled as DS as this was "weighted against" the experimental hypothesis, in that she is the larger of the 2 girls, with a higher verbal IQ. It seems very unlikely, therefore, that she would have, by her own behaviour alone, engendered such significant differences in the mothers' communicative style, particularly differences which, in many ways, conform to the pattern reported for mothers to "real" DS children. Moreover, as Chapter 5, Fig. 5.9 illustrates, mothers' behaviour with S, unlike that they show with H, conforms to the pattern of behaviour they show with their own child in the laboratory situation, albeit "dampened", as discussed in Chapter 5, perhaps by S being an unknown child. So whilst this methodological consideration cannot be ignored, it seems unlikely that it was responsible for the bulk of the significance found.

Similarly, as with the previous experiment, the possibility of Experimenter Effect must be raised. It could be argued that the results are due to subjects' response to the perceived demands of the experiment. However, once again, reference to the differences found seem to make this unlikely: it is improbable that subjects could have perceived a demand for unresponsiveness intrinsic to this

experiment and the different use of the 2 interrogative forms is arguably quite a subtle distinction, and thus hard to imagine as a response to a perceived demand.

Indeed, overall, even considering such methodological constraints as these, the picture does emerge from this experiment of certain communicative behaviours which seem to be a response purely to the diagnostic/intellectual label DS. These are specifically a tendency to ignore the child's attempts to initiate interactions and to use less complex speech, particularly more simple interrogatives and fewer complex interrogatives. Within the albeit short period of this experiment, these behaviours also appear to be quite intransigent, showing little or no flexibility when faced with the obviously nonhandicapped behaviour exhibited by S.

In addition, this study perhaps also gives an indication as to which aspects of maternal speech reported in the DS literature could be elicited by the child, rather than in response to the label; several of the findings on maternal directiveness and maternal speech productivity were not replicated here, and some (e.g. amount of vocalisation) were even significantly reversed, and this possibly indicates that such behaviours are an adaptive response to deficits in the child's communicative abilities due to her specific genetic handicap. The other significant differences elicited in response to the experimental manipulation of the labelling, however, suggest that to some extent, similar findings in the "real" DS literature cannot be taken as indisputable evidence for maternal adaptation to DS children's intrinsic deficits.

The following section will now examine mothers' attitudes to and interpretations of the twins' behaviour in an attempt to further

illustrate and explain this phenomenon.

3.4 Information from the Recorded Interviews with Subjects as to their Impressions of H and S

As stated above, after each of the mothers had been recorded with H and S, they were then interviewed as to their opinions of the 2 children, and any differences they perceived between them. Their responses were transcribed and categorised according to (a) the initial impressions that they reported to have formed and (b) the explanations they offered for the children's behaviour.

(a) Initial Impressions

Of the 11 subjects, only one mother (Number 9) expressed doubt that Twin S had DS. All other subjects readily accepted the labelling. However, all the mothers expressed their good impression of S: for example, Mother No 2:

"Well I was very impressed. I thought S was highly intelligent. I was very impressed with her counting, her colours - um - to me she didn't really look Down's either . . ."

Mother no 4:

"Well . . . I keep comparing them against L [her daughter] . . I thought they were fantastic . . . really very, very good . . ."

In addition, of the 10 mothers who believed the experimental manipulation, 8 of them commented on the fact that to look at S, one is not aware of her DS: For example Mother No 1:

"Well I couldnae actually see anything, you know, when I first seen them . . ."

Mother No 3:

"S . . . you would never believe, to look at had DS . . ."

(b) Explanations

Nevertheless, despite this expressed awareness of her "normal" appearance, of the 10 mothers who did not question the diagnostic label of DS put on her, 7 mothers outlined their observations of "failings" or negative aspects of S's development and character, compared to that of her sister. For example,

Mother No 1:

"H talked more . . . I did the same things with them, but S didnae understand all what I was saying . . ."

Mother No 3:

"S . . . you would never believe, to look at, had DS - although she's, well, slower . . ."

Mother No 5:

"I would just have said she [H] was brighter . . . I mean S didnae do anything - not so quickly . . ."

Mother No 8:

"I noticed her [S's] counting: she's counting, but she started at the bottom, but, she did the numbers, but she didn't really know what they meant. Same with the talking: I think she knew it, but the other one (H) did it more, sort of automatic".

Mother No 10:

"I think perhaps her [S's] physical skills were slightly slower, and her manipulative skills with the [jigsaw] pieces were a bit slow . . ."

Mother No 11:

"... I thought the other one [H] had better concentration. ... (she) did take more command and did what she wanted, and knew what all the colours were, and things. She didn't really need any guidance from me at all, whereas this one [S] was more immature ..."

Mother No 6:

"She understood everything I was asking her, you know, but H, she's lovely, she's obviously very bright ..."

Three of the 10 mothers who believed the DS label did not make the type of comments reported here. One, Mother No 4, was so obviously upset by S's skills compared to her own, genuinely DS child, that the interview was terminated immediately she showed her distress and the Experimenter de-briefed her as to S's true intellectual abilities. The other mothers who also did not make the explanation type comments outlined above were Mothers No 2 and 7. Both of these mothers (unlike the other 7 in this group who believed the labelling) and indeed, Mother No 4 too, expressed their appreciation of S's skills in comparison with their own children; for example,

Mother No 7:

"She was that clever with the jig-saw, I thought she was marvellous; really painstaking - not our usual tantrum ..."

Mother No 2:

"Her chatting back, compared to R [her daughter] - my R - you know you could have a - conversation - tremendous ..."

Mother No 4:

" . . . I keep comparing them against L [her daughter] . . . I thought they were fantastic - really very, very good . . ."

3.4.1 Analysis and General Discussion

Subjects' interpretations of S's behaviour can be categorised as positive or negative. For 7 of the subjects, interpretation of S's behaviour was negative and achievements were "explained away". For 3 subjects (mothers Nos 7 and 2, as cited above, and also mother No 4) S was judged against their own DS child, and thus perceived positively (hence Mother No 4's distress). One mother, as stated, did not believe the experimental manipulation.

If the 10 subjects who believed the experimental manipulation are thus categorised as giving positive or negative type explanations, and these categorizations are compared with whether these same 10 subjects showed a positive or negative labelling effect in the preliminary investigations of mothers' attitudes (see Chapter 2), the results are as follows:

		Labelling Effect	
		Positive	Negative
Explanations	Positive	2	1
	Negative	0	7

TABLE 3.3 to show: distribution of the 10 subjects who believed the experimental manipulation according to the positive/negative categorisation of their explanations and the positive/negative value of the labelling effect they showed.

These results were analysed using Fisher's Exact Test.

The results were found to approach but not reach significance, yielding a probability of $p = 0.066$. Given the conservative nature of this test (Siegel, 1956) this near significance together with the results of the previous two studies, suggests that that subjects' perceptions, causal attributions and understanding of children called DS are all affected by that label, irrespective of the child's actual behaviour, and this is perhaps best explained with reference to the social psychological literature on attribution theory and stereotyping.

Whilst it is not proposed to review fully this literature (but see, for example, Harris and Harvey, 1981), several studies present interesting parallels with the results discussed here. In a study by Duncan (1976), for example, white subjects watched a videotaped interaction of a black man and a white man having a discussion which culminated in one or the other (depending on which experimental condition was being portrayed) giving "an ambiguous shove" to his fellow actor. (Subjects were actually told that they were watching a live event on closed-circuit television). Subjects had to code the behaviour they witnessed, and the study showed that interpretation was based almost entirely on the person's race. That is, if the white man had been seen to shove the black man, this was interpreted as playfulness or dramatization, but if the reverse was true, then this was interpreted as aggression or violence.

It could be argued that insofar as the present experiment is concerned, a similar type of stereotypically induced encoding bias

allows subjects to interpret Twin H's counting as evidence of real ability, but to interpret the same behaviour by Twin S as:

" . . . she did the numbers, but she didn't really know what they meant . . . "

Thus as Hamilton (1979) argues, stereotypes seem to result in subjects "seeing" confirming evidence and "not seeing" incongruent evidence, a process which, these interviews would suggest, is much in evidence here. However, here this bias not only leads subjects to "not see" incongruent evidence, but it also seems to lead them to explain away, or discount, that which they do see. The notion of discounting is developed to some extent by Kelley (1972) in his theory of attribution. In this he argues that if another plausible cause for a person's behaviour is available, an observer might discount or ignore the first possibility, and do so with a high degree of certainty. Kelley himself does not develop this concept of discounting to its fullest, and, as Hamilton again discusses, he does not propose what decisional rules people might follow in deciding which of seemingly equivalent causes to discount. However, if a stereotypically induced encoding bias hypothesis is correct, then there would be reduced conflict between "equivalent causes"; stereotypically incongruent information would be discounted, and stereotypically confirmatory evidence would be encoded. The plausibility of such an hypothesis evidently needs further discussion and investigation, both of which are considered outside the scope of this study.

Another example from the literature concerned with racial stereotypes however, which is even more salient in terms of this

present study, is an investigation by Word, Zanna and Cooper (1974). This firstly showed that white interviewers showed less positive behaviour when confronted by black interviewees than they did when confronted by white interviewees. The experimenters then trained white assistants to reproduce the behaviour that interviewers had shown to blacks and whites in the first experiment. Subjects - all of whom were white - were then interviewed by these assistants, and the interactions were recorded. Naive judges were then required to rate the adequacy of the subject/interviewees' performance and their composure during the interview. Subjects who received the less positive behaviour (i.e. like the blacks in the first experiment) received significantly lower ratings from the judges. That is, this experiment provided evidence for a process whereby the negative behaviour of a white interviewer would produce reciprocal behaviour in a black interviewee (or in the experimental instance, a white interviewee being treated as a black), thus confirming and maintaining the white's stereotypic expectations. Such effects have also been observed in the sex role stereotyping literature (e.g. Snyder, Tanke and Berscheid, 1977).

The results of the experiment in this present chapter suggest that such an effect could equally be occurring in response to the DS stereotype. Mothers evidently act in a less positive way towards a child called DS: the significantly greater number of Twin S's initiations of interactions that are ignored is in itself a good witness to this. Again, however, the criticism could be raised that mothers' "behaviour" in this experiment is based on their knowledge of the reality of DS. However, given that there does appear to be some association (albeit statistically insignificant)

between the attitudinal labelling effect and this later evidence for a stereotypically induced effect on behaviour and on the encoding of information (mothers who showed a positive labelling effect seem also to show a lack of an encoding bias), then it should be also emphasised again here that on some attitude scales (see Chapter Two) a significantly different labelling effect was shown by mothers of DS preschoolers than by the mothers of the "normal" preschoolers. It thus seems unlikely that the stereotype is itself based originally and solely on the children's behaviour, but rather that to some extent knowledge about "real" DS children actually attenuates the stereotype slightly.

It should perhaps be remembered at this point that not all of the mothers in the sample gave these negative interpretations of S's behaviour. As was stated earlier, one mother, Mother No. 9, did not believe the experimental manipulation. She said this was because she managed to catch a glimpse of S's palms and noticed that she did not have the characteristic simian crease which, she believed, all DS children have. Her data was thus included in the experimental study (it may have been some while before she questioned S's label), but obviously not in the interview study.

In addition some similarity was sought between Mothers 2 and 7, as these 2 subjects showed both a positive labelling effect and positive explanations for S's behaviour. The only linking factor which can be suggested is that unlike all the other mothers, both of these 2 women had, in previous informal interviews with the Experimenter about DS, described their children as a gift, or a mission from God - both were highly religious women. Whilst it is of course impossible to generalise from so small a sample, it could

be that their religious faith gave them the framework for restructuring their beliefs and experience of DS, thus they tend to view it in a positive, almost idealised way. This is not to advocate the case of religious beliefs: it could well be that some other personality factors predisposed these women to both intense religious faith and a positive, idealised attitude to DS.

It should finally be noted that mother No. 4's distress suggests almost another dimension to those on the table of association shown above (Table 3.3). She described afterwards how S had made her feel totally despairing about her own daughter: thus whilst Mothers 2 and 7 believe the labelling and use S's behaviour, correctly perceived as "good", to enhance their almost idealised views of DS children, and whilst the majority of the mothers discount or misperceive her behaviour so as to maintain their negative image of DS children, Mother No. 4 perceives that S's behaviour is good but thus regards her own DS child even more negatively - the direct opposite of Mothers 2 and 7.

However, overall, for the majority of subjects, these interviews suggest that mothers are actually seeing and encoding behaviour of DS children differently, and with a negative attributional bias. This being the case, even if some of this bias is based on "the reality of DS", this evidence still suggests that any of their children's behaviour which does not conform to this "reality", any improvements or positive developments, for example, may not be perceived as such but will perhaps also be subject to this stereotypically distorted encoding and causal attributional bias, and thus may well go unnoticed by the parents and others directly involved with the child. This could have unfortunate

consequences for both child and parents: for the mother, it may make the handicap seem worse or harder to cope with, but perhaps more importantly, for the child, it may result in improvements going unreinforced or perhaps even negatively reinforced which again could feed into this negative feedback loop, making the child gradually become more and more like that which her stereotype requires her to be.

This interview section is, of course, less rigorously controlled than the earlier part of the study and once again, methodological considerations as outlined in the previous section cannot be ignored. In particular, subjects in the interview situation may be especially susceptible to demand characteristics and experimenter effect. However, taken together with the experimental evidence and the near significant association between these results and the earlier labelling effect, the overall conclusion is that evidence exists for more than simply an experimental artefact. The effect of the label DS seems to change radically mothers' attitudes and perceptions of children thus labelled such that they exhibit behaviour which is in many ways unrelated to that of the child and they show an extremely negative attributional bias. The possibility that this could lead to a self-fulfilling prophecy which could only further handicap the already problematic development of the DS child suggests that such effects should be taken into account in the design of intervention programmes for these children. Moreover, a study such as this perhaps begins to document the evidently subtle parameters of the DS stereotype insofar as communication is concerned, and its effects on mothers' behaviour, allowing for the beginnings of a "teasing out"

of those findings in the experimental literature on mother and DS child communication which may be said to be child-elicited, and those which are perhaps mother-elicited. Whilst it must be borne in mind that many such studies involve mothers in interaction with their own DS child, unlike the experiments reported here, it may still be argued that findings of greater maternal use of commands, for example, may well be a response to the child herself and deficits specific to her genetic condition, for this behaviour is not shown by mothers when confronted by "normal" behaviour exhibited by a child labelled as DS. Likewise, the failure here to replicate with the DS labelled child the finding of increased maternal vocalisation to DS children, compared with that used to nonhandicapped children, suggests that this too may be a child-elicited feature of maternal speech. However, evidence of less maternal responsiveness or less maternal engagement in child dependent or child directed interactions, and evidence of the less frequent use, by mothers of DS children, of complex questions, could all be evidence of maternal adaptation not specifically to the demands of the children themselves, but to subtle, negative stereotypic expectations held for children with DS. This is not to rule out the possibility, of course, that the DS child makes a significant contribution to any peculiarities or idiosyncracies observed in the mother-DS child interactive relationship. Indeed, the next chapter presents an investigation of whether any such "abnormalities" do exist which may affect the communicative abilities and behaviours of DS children.

CHAPTER FOUR

THE PRESCHOOL DS CHILD'S RECEPTIVE AND EXPRESSIVE LANGUAGE

4.1 Introduction

In considering the DS child's linguistic environment, not only must aspects of her mother's communicative behaviour be examined, but it is also necessary to consider any deficits or inadequacies that the child herself brings to the interaction. One such deficit that mothers of DS children participating in the present studies stressed repeatedly and with conviction (as have mothers in previous studies, for example, Mitchell, 1980), and one which, if true, would be a vital consideration if the appropriateness of the linguistic environment is to be assessed, is that of a receptive/expressive difference; specifically mothers argued that language comprehension (or receptive language) was more advanced in their DS children than is their productive/expressive language. In exploring this claim more fully it was found that even within "normal" child development literature, the relevant findings are far from straightforward.

Whilst it is not proposed to review here evidence for the "normal" development of speech understanding and production, (see for example, Bloom and Lahey, 1978), it should be noted that the often held assumption that comprehension necessarily precedes production is not totally uncontentious, with evidence and arguments existing both for (e.g. Fraser, Bellugi and Brown, 1963; Benedict, 1979, etc.) and against (e.g. Lahey, 1974; Chapman, 1974, etc.) this hypothesis. Bloom and Lahey (1978) conclude that the relationship is more complex than the simplistic-linear comprehension-to-production sequence that was originally believed; although children evidently understand some speech before they begin to talk, it can be observed that the words that children first learn to understand and respond to are not necessarily the first words that they

subsequently learn to say. Nevertheless, some degree of language comprehension evidently exists before speech develops. Insofar as DS children's development is concerned, the notion of a receptive-productive gap seems commonly believed (e.g. Share, 1975) although investigations of language skills and development in this specific area are few, and have often been couched within the context of research into better educational intervention or facilities (e.g. Nicklin, 1980). Moreover often, as Cunningham, Glenn, Wilkinson and Sloper (1983) point out, the claim of a receptive-productive gap is derived from the use of psychometric assessments, or from comparisons of subjects' performances in experimental situations involving spoken versus nonverbal responses. One such study, by Cornwall (1974), for example, involved a sample of DS subjects aged between 5 and 10 years (CA), and compared their performance in 2 test situations, one requiring a language response and the other, which was also presented orally, only needing a nonverbal response. The differences in the subjects' performances at these tests led Cornwall to argue that the subjects' true levels of verbal ability are perhaps masked by their poor expressive language.

However, this finding is not without contention. Cunningham et al (1983) set out to test (amongst other things) whether either language production and/or comprehension is particularly delayed compared with overall mental ability, using a combination of various psychometric and symbolic play assessments, of which they used the Reynell Developmental Language Scales (Reynell, 1977) to assess productive and receptive language. The study involved a large sample of 73 DS children with CA range of 19 months to 90 months (with a mean of 48.9 months), and an MA range of 13 to 73 months

(with a mean MA of 30.4 months). Results confirmed that language acquisition is the area of slowest cognitive progress in DS and at around 2 years MA receptive language was significantly better than expressive, but over the whole age range, there was no significant difference between receptive and expressive skills; only in male DS subjects was there a non-significant trend for receptive language scores to be higher than expressive. Cunningham et al conclude that there is thus a need to look more closely at possible sex differences in the language development of DS children.

Nevertheless as stated above, mothers of the DS subjects in this present project repeatedly expressed their convictions that their children understood far more than they were saying - this belief being firmly held despite the fact that all the DS children were female, and like Cornwall (1974; cited above), they felt that their children's poor expressive abilities gave an erroneous impression of their true but underlying verbal skills.

It was thus decided to more fully examine the relationship between receptive and productive language in DS children. Unlike many of the studies involving "normal" children, the aim in this present study was not to determine whether production and comprehension of language developed in DS children chronologically, but rather to examine the relationship of speech comprehension and production to other aspects of the child's language, thus asking the question: what does it mean in terms of other aspects of a DS child's language, to say that a mother's speech is matched to that of the child, or indeed, what does it mean to assess the child's language on the basis of her productive speech?

As a basis for this investigation of the relationship between the various components of a DS child's language, a study in this area but involving "normal" children, and conducted by Goldin-Meadow, Seligman and Gelman (1976) was adopted. This study looked at the relationships between receptive speech, productive speech, frequency of speech and length of word combinations specifically. These researchers found that where language-learning 2 year olds were concerned, these language sub-skills were closely related, with children firstly being in a "Receptive stage", where they said far fewer nouns than they understood, and although they understood several verbs, said none. It was found that as the children began to close this comprehension/production gap (i.e. they could say all the nouns they understood) then they could be described as entering a "Productive stage" wherein not only was the ratio of noun comprehension to production close to 1:1, but verbs began to be used. These researchers found this pattern of comprehension-production development was significantly correlated with an increase in the children's length and frequency of word combinations. Thus they argue, noun ratio could be regarded as as good an indicator of language development as the more commonly accepted MLU.

It was then decided to replicate this study with a sample of early language learning DS children in order to enable the relationships between speech production, comprehension, frequency and length of word combinations to be similarly examined in a handicapped sample. It should be noted that it was not initially intended to directly compare specific results obtained here with those from Goldin-Meadow et al's study but rather to present a

profile of the relationships between the different aspects of speech in the early language learning DS child. Their study thus served to provide a tried and tested methodology involving vocabulary standardised for "normal" 2 year olds and which should thus be at least partly familiar to DS children around the age of 4 years (CA).

4.2 Method

4.2.1 Subjects

The subjects were 11 female preschool children with DS, ranging in chronological age from 34 months to 53 months (mean CA = 42.5 months). All children and their mothers were well known to the Experimenter through longitudinal research contact. Moreover, all children and their parents were part of self-help organisations such as the Scottish Down's Syndrome Association, and many were also involved in local intervention and education programmes for handicapped children. (It should be noted that the original sample involved 12 subjects, but one child was withdrawn from participating by her mother at the last moment, due to family problems).

4.2.2 Materials

Materials used were a range of everyday preschool toys and commonplace household objects as listed in Table 4.1, and as used by Goldin-Meadow et al (1976).

4.2.3 Vocabulary Tested

The list of nouns and verbs used to test the children's receptive and expressive speech is that used by Goldin-Meadow et al (1976). It is comprised of 70 nouns and 30 verbs (see Fig. 4.1), selected by Goldin-Meadow et al as representative of vocabularies of

A. NOUNSParts of the Body

foot
head
hair
mouth
hand
teeth
finger
arm
lips
tongue
knee
elbow
thumb
armpit

Articles of Clothing

hat
sock
button
belt
pocket
scarf
badge

Vehicles

airplane
train

Animals

fish
cat
rabbit
bear
cow
pig
giraffe
butterfly

Parts of the House

clock
chair
table
door
window
house
floor
wall
sink
lamp
pot
couch

Letters and Shapes

A
star
M
heart

Food

banana
orange
grape
cake
cereal
sugar
mustard

Miscellaneous Articles

ball
pillow
scissors
flower
crayon
money
paper
plate
mirror
ladder
broom
ring
cigarette
flag
tire
stamp

B. VERBSTransitive Verbs

eat
throw
open
close
kiss
drink
blow
drop
hug

Transitive Verbs

pickup
shake
touch
wash
step on
kick
push
pull
point to

Intransitive Verbs

sit
jump
run
stand
lie down
fall
turn around
dance
fly
cry
smile
crawl

TABLE 4.1 to show: Vocabulary Tested in the Comprehension and Production Tests.

From: Goldin-Meadow, S., Seligman, M.E.P., and Gelman, R.: "Language in the two year old". Cognition, 1976, 4, 189-202.

"normal" 2 year old children, as determined by their pilot work.

4.2.4 Procedure

The basic procedure adopted in this experiment was similar, although not identical, to that used by Goldin-Meadow et al. All subjects were tested by the same Experimenter, and in their own homes. The Experimenter spent between one and 3 days (consecutively whenever possible), in each child's home, assessing her comprehension and production of the vocabulary listed in Table 4.1. The technique employed was to spread all the toys before the child, and to proceed as detailed below. However it should be noted that where such a methodology failed (for example, where it failed to interest the child or hold her attention), similar methods were woven into the child's regular, everyday games and activities. (So, for example, if all the toys were spread on the floor and it was the child's mealtime, the Experimenter might invite her to "Bring the _____ (designated item) into the kitchen to have dinner too", or whatever, rather than sticking rigorously to the search/label "game" detailed below.

(a) Comprehension Test

As in Goldin-Meadow et al., for each of the test nouns, the child was asked, "Where's (point to, show me, bring me, etc.) the _____", where the designated item was one of a large set of toys or part of the body. For verbs, the child was asked to perform the action indicated by the verb herself or to make a toy perform the action (for example, "Make the doll dance", or "_____ (child's name) dance"). For transitive verbs, again as in Goldin-Meadow et

al's study, the child was asked to perform the action on an atypical object in case she could guess the meaning of the verb from the accompanying noun. (Goldin-Meadow et al cite Shatz (1975) as evidence of children's willingness to comply with the sometimes bizarre requests that ensue from such a methodology). Insofar as the child's understanding of the verb with the atypical object was concerned, she could demonstrate her understanding regardless of her choice of object or agent (again as in Goldin-Meadow et al), to receive credit for this.

If the child passed an item in the comprehension test first time, then it was not re-presented. If she failed, it was presented again, later on in another game sequence, usually not more than 3 times, although if the child's mother (who was often present) indicated that the child usually knew that particular word, then it was presented again up to 6 times. (It should be noted that such multiple repetitions usually spanned several days). If the child was correct on one of the re-tests she was given credit for that item.

(b) Production Test

To test for production of nouns the experimenter pointed to, held or touched each item and said "What's this?", although on several occasions a child spontaneously labelled an object in the course of playing. To test for the production of verbs, the Experimenter either performed the action herself, or made a doll perform the action and asked: "What am I (or what is the doll) doing?" For both nouns and verbs, if the child was correct, she was credited for that item and it was not subsequently retested. For

verbs, any part of the verb was credited as correct (e.g. "dance" and "dancing" were treated as identically correct) and also if, over trials, the child used her own idiosyncratic word or pronunciation (but which was nonetheless identifiable as the noun or verb to which it referred) then this was credited as correct. Thus "jink", for drink, and "choo-choo" for train would both be considered correct, if used repeatedly.

Comprehension and production of nouns and verbs were randomly distributed throughout the time spent testing, with the restriction (as in Goldin-Meadow et al) that comprehension and production questions for a given word never occurred in immediate succession. Throughout the sessions, the Experimenter was encouraging and positive, but she gave no specific feedback.

(c) Frequency of Speech and MLU

Unlike in the Goldin-Meadow et al study, only one Experimenter conducted this study, so no notes were made of the child's spontaneous utterances, articulation, etc. Furthermore, as this Experimenter conducted the study in a slightly less structured way, often incorporating the test items into games and activities ranging throughout the home, it was not convenient to tape record the test sessions. However, to enable an assessment of the child's frequency of spontaneous speech, and length of word combinations the Experimenter video recorded each child at play with her mother shortly before this Experiment was conducted. These video recordings were made during unstructured mother-child play in the laboratory. To calculate each child's MLU, the number of words per utterance was noted and divided by the total number of utterances.

Each child's longest utterance (in words) was also noted. The overall length of each videotape (in minutes) was divided by the total number of child utterances to give a measure of frequency of utterance for each child.

4.3 Results

In general, as in Goldin-Meadow et al, most of the children's errors were of omission rather than commission.

In the Goldin-Meadow et al study, children were divided into a Receptive group and a Productive group, on the basis of their noun comprehension to production ratios, with children who understood approximately 3 times more nouns than they could say being labelled as "Receptive" and those with smaller noun ratios, who said almost every noun they understood being placed in the Productive group. On the basis of this division, Goldin-Meadow et al found that children in the Receptive group used no verbs at all, although they understood several, whilst productive children used many verbs - although not as many as they understood.

Using Goldin-Meadow et al's criteria, therefore, children in the present study with noun comprehension to production ratios of 2.9:1 or greater were labelled as Receptive, whilst those with noun ratios tending towards 1:1 formed the Productive group. As in the Goldin-Meadow et al study, it was found that children in the Receptive group used no (or almost no) verbs, although they understood several, whilst the Productive children used many verbs, although they still understood more than they produced, hence they still show relatively high verb ratios. (See Table 4.2 for a comparative table of the present results and those of Goldin-Meadow

TABLE 4.2

Child's Name	Age (Months)	Noun Ratio	Verb Ratio	M.L.U.	Longest Utterance	Frequency of Utterances
<u>Receptive</u>						
Christy	41	2.9:1 (52/18)	22:1 (22/1)	1.00	1 word	1/1 min 7 secs
Louise	35	- (28/0)	- (17/0)	-	-	-
Patricia	42	- (6/0)	- (11/0)	-	-	-
Katie	40	3.1:1 (50/16)	27:1 (27/1)	1.33	2 words	1/1 min 40 secs
Jenna	34	5.0:1 (25/5)	- (12/0)	1.00	1 word	1/1 min
<u>Productive</u>						
Angela	47	1.4:1 (46/32)	6.3:1 (25/4)	1.32	3 words	1/17.6 secs
Ailsa	37	1.4:1 (41/29)	7.0:1 (17/3)	1.00	1 word	1/10 mins
Lyn	41	1.2:1 (49/40)	7.0:1 (28/4)	1.05	2 words	1/30 secs
Suzi	49	1.1:1 (50/45)	1.2:1 (30/25)	1.36	2 words	1/54.5 secs
Rhona	48	1.0:1 (61/59)	1.7:1 (30/18)	1.04	2 words	1/25 secs
Laura	53	2.0:1 (49/25)	3.1:1 (22/7)	1.46	2 words	1/21.4 secs
Multiword Utterance Mean =						
3.25 per session (Range = 0.6)						
<u>Receptive</u>						
Michael	26	7.7:1 (46/6)	- (22/0)	2.0	2 words	58.12 per session (Range = 17-181)
Lexie	22	5.0:1 (35/7)	- (22/0)	2.09	3 words	
Melissa	21	4.4:1 (22/5)	- (14/0)	-	1 word	
Jenny	14	2.7:1 (27/10)	- (9/0)	-	1 word	
<u>Productive</u>						
Ray	27	1.5:1 (49/32)	5.3:1 (21/4)	2.14	4 words	58.12 per session (Range = 17-181)
Sarah	23	1.3:1 (41/31)	5.0:1 (20/4)	2.71	4 words	
Perry	24	1.3:1 (49/38)	2.8:1 (28/10)	2.48	4 words	
Leah	26	1.3:1 (56/43)	2.7:1 (27/10)	2.87	6 words	
Harry	25	1.2:1 (56/45)	2.9:1 (23/8)	3.18	8 words	
Chris	26.5	1.2:1 (54/45)	3.3:1 (23/7)	2.34	4 words	
Peter	23	1.1:1 (49/43)	1.7:1 (26/15)	4.48	7 words	
Lee	26	1.0:1 (54/52)	1.8:1 (28/16)	4.20	7 words	

et al). It should be noted that again as in Goldin-Meadow et al, no child produced a word that she had not passed on the comprehension test.

Goldin-Meadow et al furthermore observed that the correlation between the Productive children's noun and verb ratios, was just significant, ($r_s = 0.695$, $p < 0.05$), indicating that in these "normal" children, relatively low noun ratios tended to occur in children with relatively low verb ratios. A similar correlation was thus calculated for the Productive group in this present data, but this did not reach significance ($r_s = 0.46$, $p > 0.05$).

Again following the procedure used by Goldin-Meadow et al, the children's mean length of utterance (MLU), in words, was calculated, and also their longest word combinations. Both of these sets of statistics were taken from analysis of the video recordings of the children playing with their mothers. Of the children with expressive speech (9 subjects), Christy and Jemma only used one word utterances. All other subjects used both one and 2 word utterances and Angela used one 3 word utterance. This finding is in contrast to that of Goldin-Meadow et al, who found that a decrease in noun ratio correlated significantly with an increase in the average length of word combinations ($r_s = 0.874$, $p < 0.01$), with children in their Receptive group showing longest utterances of between one and 3 words (mean = 1.75), and children in their productive group a range of 4 to 8 words (mean = 5.5). No such correlation was found in this study, ($r_s = 0.20$, $p > 0.05$), and indeed verb ratio too showed no significant correlation with MLU ($r_s = 0.31$, $p > 0.05$).

However, Goldin-Meadow et al observed that Receptive group children, in addition to producing shorter utterances, also produced

utterances less frequently. This latter observation was replicated in this present study with there being a significant correlation between increasing MLU (despite this increase being very slight) and increasing frequency of utterance ($r_s = 0.61$, $p < 0.05$). However, there was no significant correlation between the present subjects' frequency of utterance and their noun ratio ($r_s = 0.40$, $p > 0.05$). (It should be noted, however, that the results of the frequency of utterance measures cannot be compared in any direct way with those of Goldin-Meadow et al, as their's were obtained during the fairly formal testing in the child's home, whereas those in this present study were obtained from videotaped mother-child free play in the laboratory).

4.4 Discussion

In discussing the results of this study, comparison will be made with those of the Goldin-Meadow et al study. In so doing, however, it should be noted that such a comparison is facilitated by the coincidental similarity of the 2 sets of results (as will be discussed below), and that the 2 sets of children were not intentionally matched in any way. Thus the Goldin-Meadow et al sample consists of middle-class, American, nonhandicapped preschool girls and boys, whereas this present study employed only Scottish DS girls from cross-socioeconomic backgrounds.

Bearing in mind such methodological considerations, the similarities between this and Goldin-Meadow et al's study are nevertheless striking, particularly insofar as Receptive and Productive vocabularies are concerned. In this present study, the subjects can be divided into a Receptive and an

Expressive/Productive group (using Goldin-Meadow et al's criteria). The Receptive children, like those in Goldin-Meadow et al's nonhandicapped, Receptive group understand 3 times or more nouns than they can say and they produce no, or almost no verbs at all. (It should be noted that 2 children showed no expressive speech whatsoever). Furthermore, again like the nonhandicapped children, those DS children within the Productive group show noun ratios diminishing - that is, they begin to be able to say all that they can understand, and they also begin to produce verbs. The absence of any significant noun ratio - verb ratio correlation in the DS productive group is perhaps exacerbated by the smaller sample size than that of Goldin-Meadow et al (even within this latter study, this correlation only just achieved significance at the 5 per cent level).

Indeed, reference to the comparative tables of the data from the 2 studies, presented in Table 4.2 (above) and also to Graph (a) in Fig. 4.1 illustrates the striking similarity of these ratios and moreover of the 2 groups of children's raw scores. As can be seen from this Graph (a), for both the DS and the nonhandicapped samples, noun ratio and verb production is highly significantly correlated ($r_s = 0.87$ and $r_s = 0.90$ respectively, $p < 0.01$); with verbs beginning to be produced as the difference between comprehension and production of nouns disappears. Thus the relationship between verb production and noun comprehension and production appears very similar in these DS children to that observed in the "normal" children.

As striking as this similarity in vocabulary ratios and scores, is the difference between the 2 samples, as illustrated in

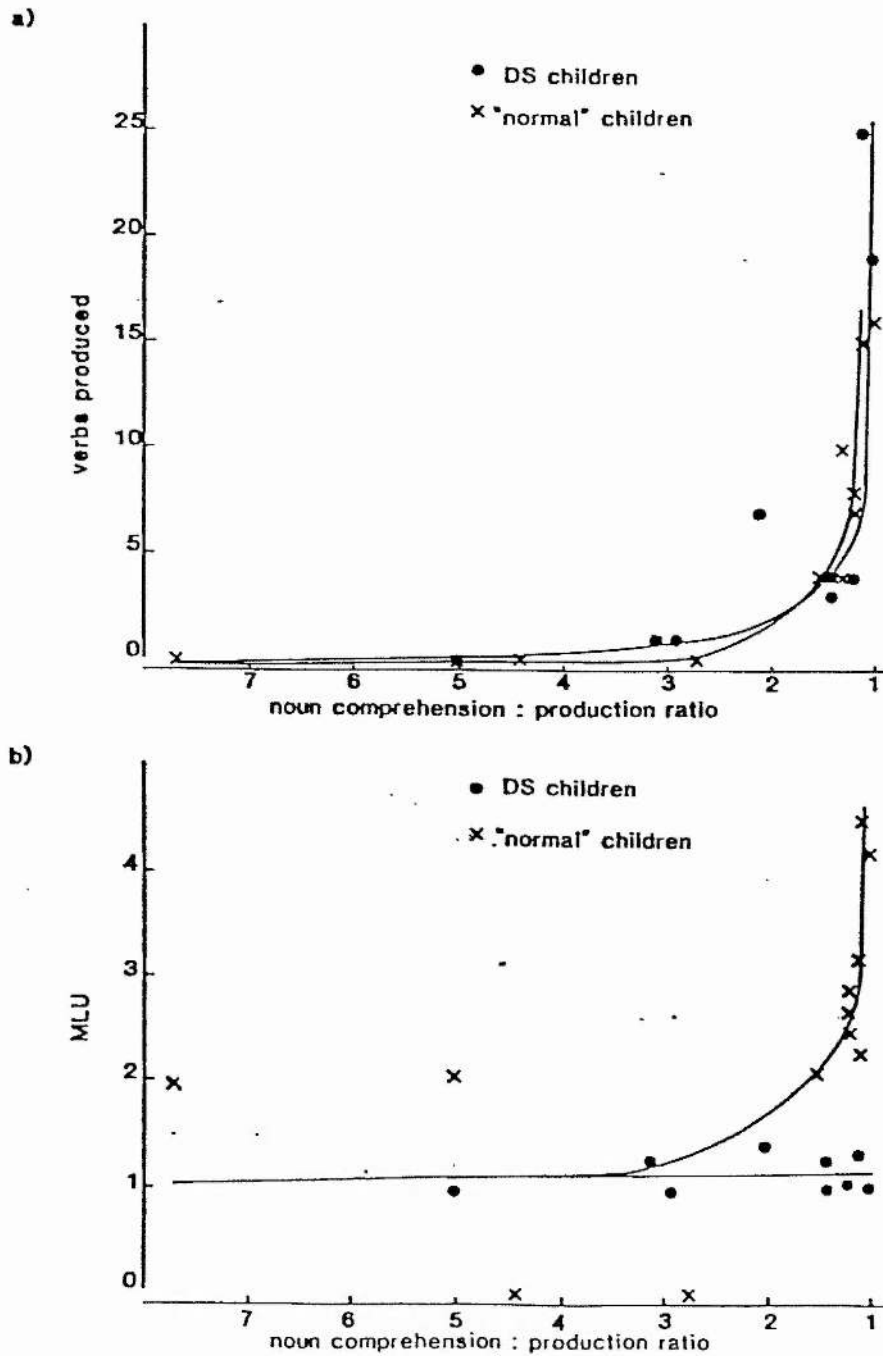
Graph (b), (Fig. 4.1). Insofar as the "normal" children are concerned, it will be seen that as their noun ratio diminishes and their verb production increases, so too they begin to use utterances of gradually increasing length. The DS children however, although seemingly understanding and producing as many nouns and verbs, and indeed, many of them being at the stage of having a near one to one ratio for nouns, produce almost no multi-word utterances, thus they do not show the steeply rising curve as manifest by the nonhandicapped sample. As stated earlier, for the nonhandicapped child, utterance length correlates significantly with other aspects of language development - namely an increasingly eroded gap between noun comprehension and production, with increasing production of verbs and with increasingly frequent utterances. Such synchronicity would suggest, as indeed do Goldin-Meadow et al, that just as utterance length can (and is) used as a gross measure of language development, so too at these early stages, noun ratio could also be used as an indicator of linguistic progress.

However, the results presented here suggest that this might not be equally the case for DS children. The near-total lack of increasing utterance length, by these DS children compared to their seemingly "normal", albeit delayed diminution of the noun ratio and increased verb production points to a lack of synchrony in the development of these different aspects of language in a way not seen in the "normal" child. It should be noted that it is possible that such an asynchronicity in the development of these different linguistic sub-skills may be exacerbated, if not caused, by intervention programmes or parent guide books which perhaps result in parents teaching their DS children large amounts of vocabulary.

Such a possibility requires further investigation, as does the implication of such a teaching strategy if it is found to be occurring. However, it seems unlikely that it is totally responsible for these observed results, if only because Ryan (1975) too found an asynchrony in the development of vocabulary skills and MLU in DS children in her study conducted at the start of the last decade when any intervention was much less widespread.

Certainly, whatever the causes of this asynchrony (and some studies (e.g. Hartley, 1982) even suggest that DS children's receptive language may be affected by possible right hemisphere dominance for language processing), its existence makes the question of a specific receptive-productive gap much more complex. It does not appear - at least insofar as the vocabulary ratios are concerned - that DS children suffer from a specific language deficit in the form of the hypothesised unusual receptive-productive gap discussed at the beginning of this chapter. Many of the children in this sample can say almost every noun they understand and have begun to use verbs. The deficit is rather one of syntax - their production is affected by a seeming inability to put the words they know together, although it should be noted that when they do begin to increase their utterance length - however slightly - then they also show a concurrent increase in their frequency of utterance, as indicated by the significant correlation between these 2 measures. In short, this suggests that for DS children, noun ratio may well be a good predictor of vocabulary skills in general, and particularly of verb usage, but MLU is a better indicator of speech frequency.

Fig. 4.1 Noun ratio & a) verb production, & b) MLU.



N.B.: The lines on these graphs are fitted by hand, to more fully illustrate the differences between the two samples of children.

This tentative conclusion of an asynchronicity in the development of DS children's language, which could indeed be interpreted as their language development being different, not simply delayed, conflicts with much of the work in this area, although it must be emphasised that this present study employed a fairly small sample size which necessarily tempers any conclusions drawn from comparisons of these results with those of other studies. However, the work of Jean Rondal (1978, 1980) has offered substantial, although not exclusive, support in favour of the Delay hypothesis, at least insofar as DS language development is concerned. His studies have involved matching DS and "normal" children on the basis of MLU (measured in morphemes rather than words) and then comparing other aspects of their syntactic and semantic language. He and his colleagues found many similarities between the 2 groups both in syntactic and semantic development. Ryan (1975) too, in her sample of MLU matched "normal" and DS children likewise found many striking similarities, and more recently, studies by Owens and MacDonald (1982) and Coggins and his associates (Coggins, 1979; Coggins and Morrison, 1981; Coggins and Stoel-Gammon, 1981; Coggins, Carpenter and Owings, 1983) all of which matched DS and nonhandicapped children on the basis of MLU, found few differences between the 2 groups of children and thus lend support to the Delay hypothesis. Rondal concludes in his studies that the similarities in the language of MLU-matched DS and "normal" children attest to the validity of MLU as a measure of language development in DS as in "normal" development.

Nevertheless, both Rondal and Ryan observe that MLU matched "normal" and DS children differ on one variable: that of vocabulary, and in the case of both researchers, the DS children in their

samples show a greater diversity of expressive vocabulary than do their "normal" controls. This Rondal explains as being due to the DS children being older and having thus had more time to learn vocabulary. Ryan too argues that it is because DS children spend longer at the one word stage and/or because single words are perhaps easier for DS children to learn than syntax.

Neither researcher thus interprets DS children's greater vocabulary abilities over their syntactic abilities - a gap of a magnitude not found in "normal" development - as a difference in development. However it is argued here that it is not sufficient to explain this as due to their increased CA, if this increased CA has not also resulted in better syntactical skills. As Ellis and Cavalier (1982) argue, for the developmental position to hold, resting as it does on the assumption that persons of equal MA are equal in cognitive level it would have to "posit a trade off between organic maturation and environmental experience." Given moreover, these aspects of language appear to develop in synchrony in "normal" children, there is little evidence for saying that vocabulary is more easily learned than syntax; and if this is the case in DS children, then this suggests in itself a difference, not merely a delay, in development.

It should be noted that a study by Brinker and Bricker (1980) also examined the relationships amongst component language skills, but in a mixed sample of both nonhandicapped and handicapped preschoolers (the latter having IQs ranging from 24 to 69, their retardation being unspecified by the researchers). This study, like the present one, examined both receptive and expressive abilities for a set of nouns, and receptive abilities for a set of verbs, and

also the understanding of requests to perform actions involving 2 objects (i.e. receptive syntax). Measures also included an assessment of subjects' MLU. Using a multiple linear regression analysis to examine their results, these researchers found that whilst MA appeared to account for very little of the variation in MLU, a significant proportion of this could be predicted by the measure of receptive syntax, and vice versa. Of even more interest insofar as this present study is concerned, Brinker and Bricker also report that receptive and productive abilities for verbs did not have any significant predictive value for MLU, although they did so for receptive syntax. In other words, as in this present study, MLU and vocabulary skills seem largely unrelated. Brinker and Bricker's study, however, involves a very different subject sample from that reported here and indeed, insofar as the results cited here are concerned, Brinker and Bricker's study does not differentiate between the developmentally delayed and the nondelayed children in the sample.

Of more specific interest to the present results is a study by Harris (1983). This study casts further doubt both on the use of MLU to equate DS and "normal" children and on the "Delay" standpoint. In this study wherein DS and "normal" preschoolers were matched on MLU, Harris found not only that the DS children showed a greater variety of vocabulary in their single word utterances (as Rondal's work also showed) but also that the patterns of correlations between MLU and other measures of language ability were different in the 2 groups of children (a finding to some extent replicated in this present experiment). Specifically, Harris found that DS children's MLU was positively correlated with linkages of the primary semantic

relations Agent/Action/Object Location and expansions of 2 and 3 semantic relations. In contrast, insofar as the nonhandicapped children are concerned, he found that MLU positively correlated with the relations of specific locations and with interrogatives and negatives. In other words, the DS and "normal" children in his study appear to be approaching the task of sentence construction in different ways, although they have been equated on the basis of MLU. Thus Harris concluded that MLU does not represent the same linguistic skills for "normal" and DS children.

It should be noted that Harris does not propose, on the basis of his results, that DS children's language development is different, but rather that it is:

"... similar to that of normal children, but with variations in the extent to which the different linguistic sub-skills are co-ordinated and synchronised over time"

(Harris, 1983)

Hill and McCune-Nicolich (1980), in studying patterns of DS children's symbolic play and language also comment on their showing greater horizontal and vertical variability (rather than a difference) on Piagetian-type tasks than do "normal" children. This, it will be observed, raises the issue of what precisely constitutes a "difference" in development. Harris argues that the asynchrony he observes (and which is observed in this present study) cannot be described as "linguistic deviance" and thus cannot support a Difference position. Spitz (1983) in a critique of the Developmental (or Delay) position, however, points to the problem in defining "a difference":

"... It is in fact difficult to imagine what a qualitatively different performance would look like, since retarded individuals

have human central nervous systems. Any action they [mentally retarded persons] take in responding to a mentally challenging situation would surely be found somewhere in the range of human development, even if one had to go back to very early childhood."

Whilst it is not proposed to more fully review the Delay-Difference arguments over this and other similar points (but see, for example Zigler and Balla, 1982; Spitz, 1983) it is nevertheless evident that asynchrony of development, as found in this present study and that of Harris (1983), within the perimeters imposed by the present small sample size, casts some doubt on the efficacy of MLU as a DS - "normal" language equating device. Moreover, if as this present study suggests, this asynchrony is partial, with some linguistic sub-skills being correlated as "normal" and others being out of step, then insofar as the Delay-Difference debate is concerned it will be observed that equating children on MLU and looking at a particular set of these sub-skills may well reveal a Delay finding (as in Rondal's work, for example), but if the same sub-skills were examined with "normal" and DS children first being equated on say noun ratio, (a device which Goldin-Meadow et al argue could be used instead of MLU as a gross language measure with young "normal" children), then the results would indicate a Difference. Indeed, insofar as this theoretical debate is concerned, the results here serve to emphasise the need to define more specifically what is meant by a Difference between DS and "normal" children before any effective examination of the Delay vs Difference hypotheses can take place.

4.5 Conclusions

In summary, therefore, this study provides no evidence of a specific receptive-productive deficit in DS language development, insofar as receptive and productive vocabulary skills are concerned. In comparing it with Goldin-Meadow's work on "normal" children, however, it does illustrate a striking asynchrony in development between the different sub-skills of DS children's language, in a way not found in nonhandicapped children. This in turn raises the issue of the use of MLU, both as a measure of DS children's linguistic progress and as a language equating device for the matching of DS and "normal" children. Furthermore, this also questions the conclusions that can be drawn from the many studies using MLU in investigations of the Delay-Difference debate. Perhaps most importantly, however, the findings here emphasise the complexity of the task of adequately assessing the language of the DS child and the risks of the under- or over-estimations of her ability that might result from the use of single, gross measure assessment tools such as MLU or indeed noun ratio. If language intervention is to be effective with DS children then, the evidence here suggests, it must be founded on more complex assessments than those which are used for the nonhandicapped child.

CHAPTER FIVE

MOTHERS' OF DS CHILDREN AND THEIR
USE OF LINGUISTIC DIRECTIVENESS

5.1 Introduction

As has been described in some detail above (see Introductory chapter), the past decade or so has witnessed an increase in research into DS preschoolers' language development, with the recognition that this specific area of their development is both particularly problematic and highly resistant to change.

Much of this research has focused on maternal speech style used in interaction with DS children, and compared with maternal speech style as used in interaction with nonhandicapped children (e.g. Rondal, 1976, 1978, 1980, etc.) perhaps with the underlying assumption that intervention in maternal language style might help accelerate child language.

As discussed in the Chapter One, conclusions drawn from this literature are complicated by inconsistencies in the experimental designs used in the various studies (see Table 1.1). Specifically, whilst some studies have matched DS and nonhandicapped dyads on children's CA (e.g. Buium et al, 1974), others have used some form of developmental level matching (e.g. Davis and Oliver, 1980), whilst still others have used language developmental level matching in the form of MLU (e.g. Rondal, 1978, 1980). To further complicate the issue, some have used control groups with no matching for social or cultural variables (e.g. Wolf, 1975). In short, the results of studies in this area as to the nature of maternal speech to DS children must be seen, at least in part, as artifacts of these comparative designs, both subject to and reflecting of the methodological considerations which underlie such designs and as such, tending to few strong conclusions. Findings fluctuate from implying that mothers' speech is accurately matched and appropriate

to the language level of the child (e.g. Rondal, 1978, etc.), to finding that notwithstanding similarities in developmental level, speech styles used to DS children still differ from those used to "normal" children (e.g. Cunningham et al, 1981), to finding that maternal speech to DS children differs from that used to CA-matched "normal" children, (e.g. Buium et al, 1974). Even within studies such as that cited above of Cunningham et al (1981), which deal with both mother and child together as an interactive dyad, rather than focusing specifically on the one or other partner, conclusions are still bound by the comparative nature of the results.

As Baumeister (1967) stated:

" . . . To understand the behaviour of retardates one must study the behaviour of retardates. The study of normal behaviour is quite irrelevant to this purpose. If we aim to understand, predict, and control the behaviour of retarded individuals we need to know how they behave not how they differ . . . "

This same researcher further argues (Baumeister, 1967):

" . . . comparisons between normals and retardates can have important implications for our theoretical conceptions of intelligence and cognition. But it should be recognized that such observations of normals will not, in themselves, tell us about the behaviour of retardates."

Thus insofar as studies of mother and DS child communication are concerned, findings that mother's speech is either similar or dissimilar to that of mother's to "normal" children is of little help in determining whether a mother's speech is facilitative of language development in her DS child, unless one accepts a purely delayed model of DS children's development.

The majority of research in this area being in the form of comparative DS-"normal" studies means that there is a lack of

knowledge about DS development per se, with the result that investigations of intervention strategies tend to be somewhat "hit and miss", rather than based on firm evidence of environmental effects that facilitate enhanced development in DS children. This is perhaps well illustrated in a study by Bidder et al (1983). In this experiment, in order to ascertain whether DS children could benefit from a specific change in maternal linguistic style, the researchers instructed mothers of DS children to use fewer yes/no questions in their interactions with their children but more Wh-type questions. The reason for the implementation of this particular language strategy appears to be fairly arbitrary and seemingly based on observations of and intuitions about DS children, with tentative hypotheses about what might be beneficial to them:

"... It may be that the environment does not encourage, or expect, the children to apply language skills in everyday situations or process them into abstract use, such as remembering or planning events."

(Bidder et al, 1983)

Selective reading of the literature (none of which is explicitly referred to by these authors) may indeed have suggested that mothers of DS children tend to use fewer Wh-type questions than do mothers of "normal" children (e.g. Buium et al, 1974) but such studies provide no evidence on whether such a strategy could be facilitative or not for DS children's development or indeed, whether an absence of Wh-questions in a child's linguistic environment is associated with poor language development. In the event, the results of this intervention were positive, with children in the intervention group showing significantly more improvement than the control children. Had this not been the case, however, or had the

results been reversed, then the somewhat dubious methodology of such "hit or miss" intervention would be all the more striking; (it does indeed seem curious that ethical standards which would be condemned in pharmacological research should be upheld in the psychological arena by those whose very research aims to emphasise their belief in the power of psychological/environmental influences on children).

Insofar as maternal speech style is concerned therefore, it is argued that what is required is the long term evaluation of "naturally" occurring speech styles and their effect on subsequent child development, before any form of (ethical) intervention can be implemented.

One such study that begins to do this is that of Cheseldine and McConkey (1979). In this, the researchers firstly gave parents of a small group of DS children ($n = 7$) a language objective to work towards (such as increasing verb use and the use of consequent 2-word utterances), but they were given no guidelines as to how to work towards this objective. It was found that whilst some parents spontaneously and successfully altered their interactive strategies, others did not do so. Those parents who did not do so were then taught in a second study to use those strategies adopted by the successful parents (and somewhat added to by the researchers), with the result that comparably positive achievements were reported for their otherwise relatively non-improving DS children.

These findings are indeed tempered in their implications by the small sample size used: as the authors themselves point out, the very small numbers of subjects involved in the second study (one experimental subject and 2 controls) mean that the status of the findings is comparable to that of a case study. Nevertheless, the

results do demonstrate that some parents can spontaneously adopt suitable language teaching strategies. In this case, these were found to be a greater use of the specified target words (e.g. specific verbs) in shorter "statement" utterances, whilst parents who used a questioning or imitating strategy were found to be less successful. This then raises the issue of whether in general, outwith of the language intervention/teaching situation, some parents adopt more successful language styles than others. As discussed earlier, Rondal's work suggests that DS and "normal" children matched on MLU are provided with very similar linguistic environments, hence the assumption made by Rondal (and many others) that DS children must therefore be receiving adequate and appropriate linguistic stimulation. But as Cheseldine and McConkey suggest, the nature of DS language development may mean that normally appropriate stimulation is not sufficient and these children need linguistic input which is "more than adequate".

The present study thus sets out to look more specifically at the language styles spontaneously adopted by mothers with their DS children in play situations that are as "natural" as is experimentally possible. In particular, it sets out to test whether some aspects of maternal directiveness, which studies suggest is a consistent feature of mothers' speech to DS children (see Introductory chapter) are more likely to be associated with successful language learning, whilst others are not so prognostic of later achievement or indeed, may even be associated with poor development.

5.2 Method

Subjects

The subjects were 11 mothers and their preschool DS daughters, as reported in previous chapters. All the subjects were part of either the Down's Children's Association or the Scottish Down's Syndrome Association, or similar parent support/self help organisations. All subjects lived in Central Scotland and were from cross-socioeconomic backgrounds. (It should be noted that the sample originally consisted of 12 subjects but one mother was unable to complete the whole study and thus has not been included).

Procedure

Using Sony portable black and white video equipment (with zoom lens), video recordings were made of each mother at play with her DS child in their own home. Two recordings were made of each mother-child dyad, with approximately one week's interval between them. On both occasions, the mother was simply asked to play with her child as she would do normally and for as long as felt comfortable, using whatever toys she would normally employ when playing with her daughter.

Before the first videorecording was made, the Experimenter in each case conducted an assessment of the DS child, using the BSID (Bayley, 1969). It was then explained to the mother that the purpose of the videorecording was to note other aspects of the child's behaviour that may or may not have been included in the assessment. After the videorecordings were made, the mother was debriefed as to the true purpose of the videotapes, and it was explained that the study was specifically concerned with both

aspects of the child's own language, and also aspects of language and play behaviours that mothers use towards their DS children. All subjects were then given an opportunity to discuss these issues and the nature of the Experiment more fully with the Experimenter.

5.3 Results

A. Videotape analysis: categories used.

As noted in the Introduction, a recurring theme in the literature on mothers' speech to DS children is that of maternal directiveness, although the definitions of this directiveness vary from paper to paper; some papers do not define it at all, whilst others analyse behaviours often used as indices of directiveness without specifically calling them "directiveness". Moreover, in these analyses of directiveness, it is often not clear whether researchers are using direct frequency measures or proportional measures. This confusion is illustrated more fully by reference to Table 5.1 below, which shows some of the different behaviours specifically or implicitly used by differing researchers within the notion of directiveness. Reference to this table illustrates the need to define more precisely what is meant by "directiveness" and how it is measured, to look more specifically at what is meant by the differing aspects thereof and to determine whether these exist in isolation, or whether they all correlate with one another and can thus be combined under a general heading of directiveness.

To this end, the specific and implied aspects of directiveness found in the literature were defined and categorised in the following way, according to the nature of the demands they make upon the child within the interaction:

ASPECTS OF DIRECTIVENESS				
IMPERATIVES OR COMMANDS	TEACHING OR MANAGEMENT BEHAVIOURS	QUESTIONS	IMITATION SEEKING	UNSPECIFIED
Marshall & Hegrenes (1972)	Wolf (1975)	Buium, Rynders & Turnure (1974)	Petersen & Sherrod (1982)	Jones (1980)
Mash & Terdal (1973)	Stoneman, Brody & Abbot (1983)	Mash & Terdal (1973)		Dunst (1979)
Terdal, Jackson & Garner (1976)	Cunningham, Reuter, Blackwell & Deck (1981)			
Eheart (1982)				
Cunningham, Reuter, Blackwell & Deck (1981)				

TABLE 5.1 to show aspects of directiveness as investigated by various researchers. (It should be noted that the specific behaviour under investigation is not always labelled or discussed as being 'directive' by all researchers).

(a) Non-linguistic Directiveness

The first category, nonlinguistic directiveness, is defined as maternal behaviour aimed at controlling the child's play but without demanding any linguistic feedback or linguistic participation from the child. To examine this, the videotapes were therefore analysed for the extent of maternal toy choice, (i.e. the frequency of her introducing a new toy into the play sequence), the frequency of her use of positive commands to the child and also her use of negative comments and prohibitions.

(b) Linguistic Directiveness

The second category is linguistic directiveness, and this is defined as maternal behaviour which attempts to direct the child's behaviour by actively encouraging her linguistic participation and incorporating her responses into the play sequence. In order to examine this aspect of directiveness, the videotapes were examined for maternal requests for the child to imitate and also for maternal questioning of the child. Furthermore, the question form was further analysed according to the demands it made of the child: specifically 2 types of questions were identified. Type 1 was Simple Questions, i.e. those only demanding a yes/no answer from the child, or for her to point at or touch an object within her immediate environment, (e.g. "where are your toes?" for which the correct and desired response was for the child to point to her own toes). In other words, Simple Questions are those which make no demands on the child's expressive vocabulary or her syntactic skills. Type 2 questions are Complex Questions, and these are defined as any question which demands that the child exhibit an

expressive vocabulary skill and/or a syntactical skill. (Thus the Wh-type questions, with the exception of that Type 1 "Where" Question detailed above, would fall into this category).

Unresponsiveness

In addition to analysing the videotapes for aspects of maternal directiveness, as defined above, analyses of maternal unresponsiveness were also made. This was partly in response to findings in the literature that mothers are less responsive to their handicapped children's initiations of interactions than are mothers of "normal" children, (e.g. Eheart, 1982; Cunningham et al, 1981), and also because it might perhaps be hypothesised that maternal unresponsiveness might positively correlate with maternal directiveness, as within the context of the mother-child interaction, maternal unresponsiveness can perhaps also be seen as an index of tolerance of child directiveness, in that it is a measure of her reaction to the child exerting some control over the interaction (Mash and Terdal, 1973). Thus Maternal Unresponsiveness is here defined as the extent to which mothers ignore their children's attempts to initiate new interactive sequences: for each mother-child dyad, the number of times the child attempted to initiate an interaction was noted and whether her mother responded to or ignored the attempt. Mothers' Unresponsiveness was then expressed as the percentage of child initiations ignored by the mother. (It will be noted that these behaviour categories are identical to those used and reported in Chapter Three, where inter-observer reliability scores were reported for agreement on these classifications, yielding a mean rating score of $r = 0.86$).

B. Time Sampling

For each videotape, 10 x 1 minute periods were sampled on which the analysis was conducted. These one minute periods were evenly spaced throughout the tapes, thus the size of the interval between sampled periods depended upon the length of the tape. (These varied from approximately 15 to 40 minutes, although all but 2 were about 25 minutes long).

For those behaviours within the categories of linguistic and nonlinguistic directiveness, the data obtained from each subjects' 2 tapes were expressed as an average frequency of its occurrence per minute.

C. Linguistic and Nonlinguistic Directiveness

The data from each mother were collated, whereupon it was observed that the most frequently occurring behaviours were positive commands and questions, both complex and simple. The other behaviours measured all occurred at relatively low frequencies.

The frequencies of both positive command and total questions were then correlated, and it was observed that mothers who tended to use relatively high levels of positive commands also tended to show relatively low levels of total question use. (The correlation coefficient between these 2 categories found to be $r_s = -0.511$, $p > 0.05$, where the critical value for $r_s = 0.535$).

Each subject's use of positive commands score was then expressed as a percentage of their total questions and positive command scores, and the distribution of these percentage scores was plotted as in Fig. 5.1. As will be observed, the distribution of mothers' percentage scores is bi-modal, forming 2 distinct groups:

those who use a high proportion of positive commands, with scores at 60 per cent or over ($n = 5$), and those who use a small proportion of positive commands, with scores below 50 per cent, and thus a large proportion of overall questions ($n = 6$).

On the basis of this division ("commanding" and "questioning" groups of mothers), an analysis of variance (groups x behaviour categories) was then conducted to compare the other aspects of the 2 groups of mothers' communicative style. It should be noted that in order to compute this ANOVA, given that the two groups of mothers are of unequal sample sizes ($n = 5$ and $n = 6$), the overall sample mean for each behaviour category was inserted as an hypothetical sixth subject in the smaller group.

This ANOVA revealed a significant main effect for Groups ($F = 9.31$ with 1 and 10 d.f., $p = 0.012$), a significant main effect of Behaviour Categories ($F = 34.61$, with 4 and 40 d.f., $p < 0.0001$), and a significant Groups x Behaviour Categories interaction, ($F = 7.61$, with 4 and 40 d.f., $p = 0.0001$). The main effect of Behaviour Categories means simply that some categories of behaviour occur at higher frequencies than others and is thus not of theoretical relevance here. Of more interest is the finding of a significant main effect of groups and that of the significant interaction. To examine this latter effect more closely, post hoc analyses of means were conducted using Tukey's HSD tests. For post hoc comparisons within each group of mothers, only the differences between the two types of questions, simple and complex, were of interest at more than merely a statistical level. With a Tukey's HSD value of 0.45 at the 5% level and 0.61 at the 1% level, it was found that within Group 1, the "questioning" mothers, highly significantly more

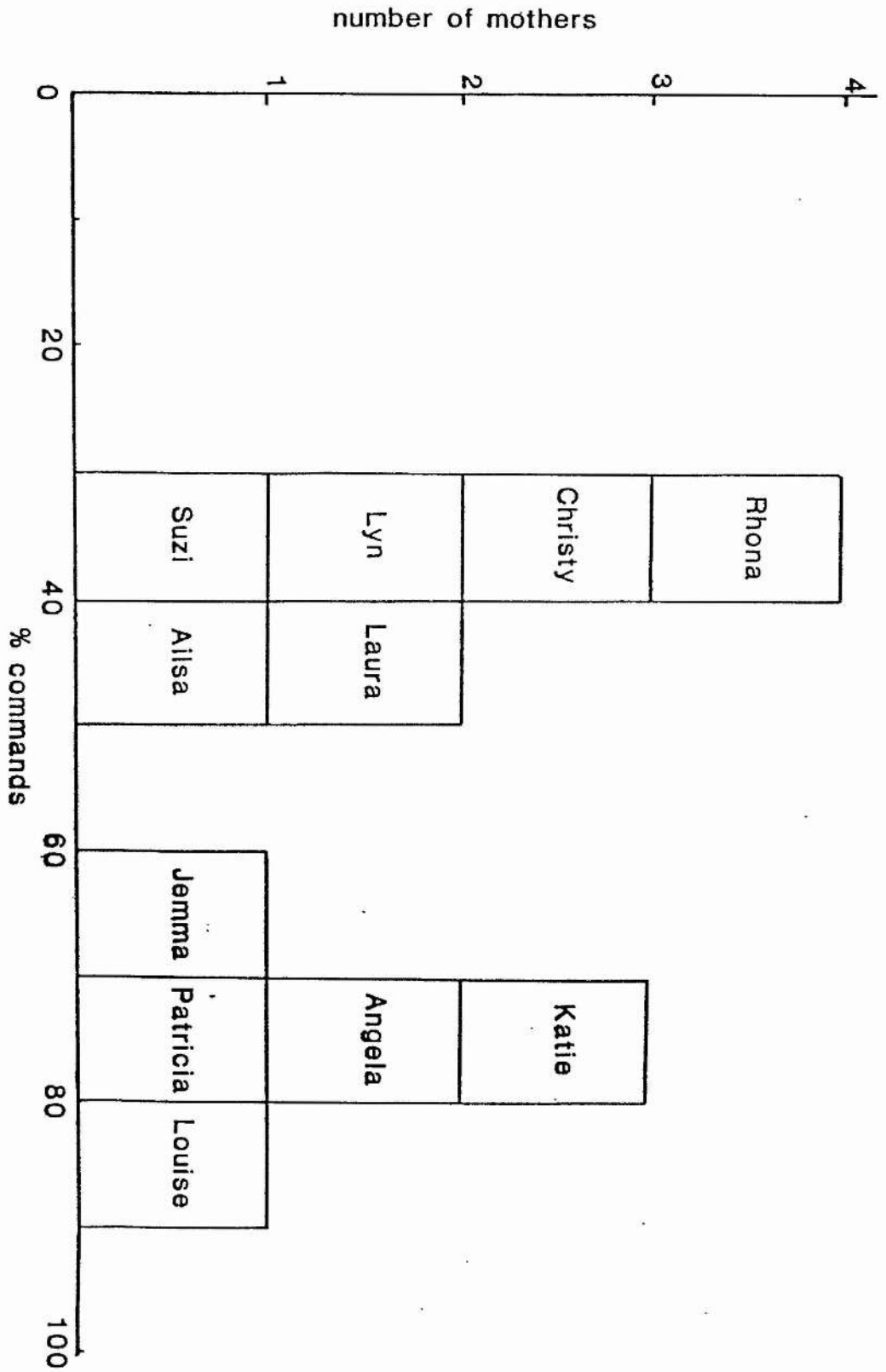


Fig. 5.1 Mothers' use of positive commands as a percentage of positive commands and questions.

simple questions were used than complex ($p < 0.01$). Within the second, "commanding" group of mothers, this difference was also significant, albeit at the 5% level, (see Fig. 5.2). For within Behaviour Category post hoc comparisons, Tukey's HSD values were calculated and found to be 0.64 at the 5% level and 0.78 at the 1% level. It was found that only Simple Questions and Complex Questions usage differed significantly between the 2 groups of mothers, both differences between means being significant at the 1% level.

The ANOVA revealed no other significant effects or interactions (see Fig. 5.2).

D. Unresponsiveness

The mean number of interactions initiated by each child per 10 minute period and the percentage of these ignored by their mothers were calculated. These data were ranked, and plotted, as shown in Fig. 5.3. The correlation coefficient between children's attempts to initiate and percentage of such initiations ignored by the mothers was highly significant, ($r_s = +0.74$, $p < 0.01$).

Mothers' percentage scores of ignoring their children's initiations of interactions were then ranked, and correlated with their total use of questions (both simple and complex together), and their use of positive commands. Neither correlation was significant for the former, $r_s = -0.15$ ($p > 0.05$) and for the latter, there was a trend for those mothers who used more positive commands to be less unresponsive to their children's initiations, but this did not reach significance, ($r_s = 0.49$, $p > 0.05$). (See Fig. 5.4). Indeed, a comparison of the Unresponsiveness scores of the 2 groups of mothers

- "commanding" and "questioning" - using a t-test for independent samples revealed no significant differences between the scores for the two groups, ($t = 1.38$ with 9 d.f., $p > 0.05$).

5.4 BSID Assessment

All the children in this study were assessed using the BSID and their scores on the Mental Development Index (MDI) were expressed as Age Equivalents. These Age Equivalents were ranked and correlated with ranks of the mothers' total question use and positive command use. There was no correlation between the Age Equivalent scores and mothers' use of positive commands ($r_s = -0.06$, $p > 0.05$), whilst there was a slight, but insignificant trend for mothers of higher age equivalent children to use more questions, ($r_s = 0.40$, $p > 0.05$). There was likewise no correlation between children's BSID and mothers' Unresponsiveness, ($r_s = 0.01$, $p > 0.05$). The BSID test was then broken down to give a language sub-scale which included the following 25 items, (numbers refer to the BSID MDI Scale).

It should be noted that in addition to calculating each child's BSID language subscale score, her MLU (number of words) was also ascertained from the videotape analyses. Whilst this did correlate with the language subscale score significantly ($r_s = 0.69$, $p < 0.05$) it was decided, as the language subscale included measures of language comprehension as well as production, that it formed a more global representation of the child's language level than does MLU, and was also more similar to the later used Noun Ratio measure, (see Chapter Four) which again encompasses both comprehension and production abilities.

Fig. 5.2 Behaviour frequencies of "questioning" and "commanding" mothers.

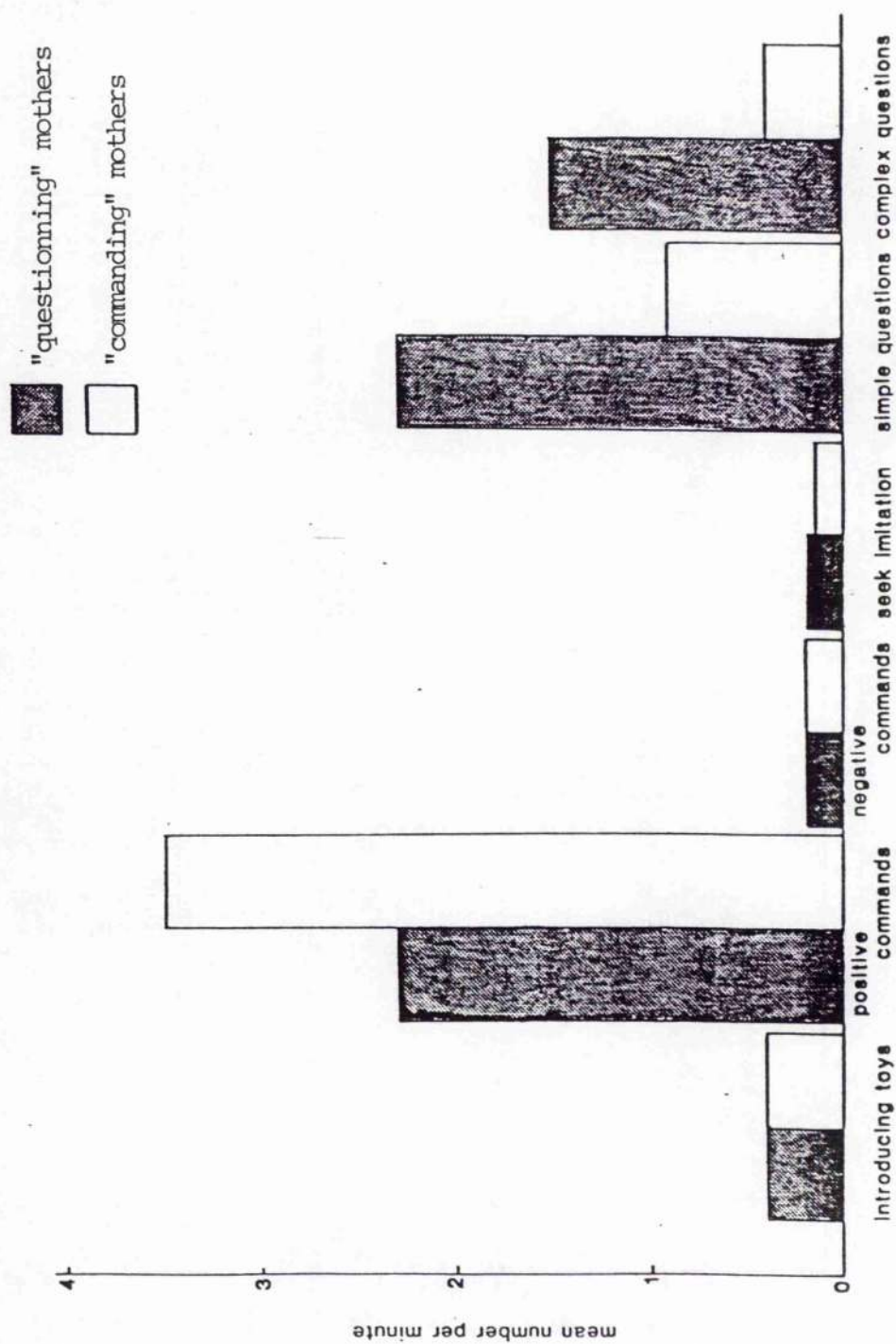


Fig. 5.3 Correlation between children's attempts to initiate interactions & mothers' unresponsiveness.

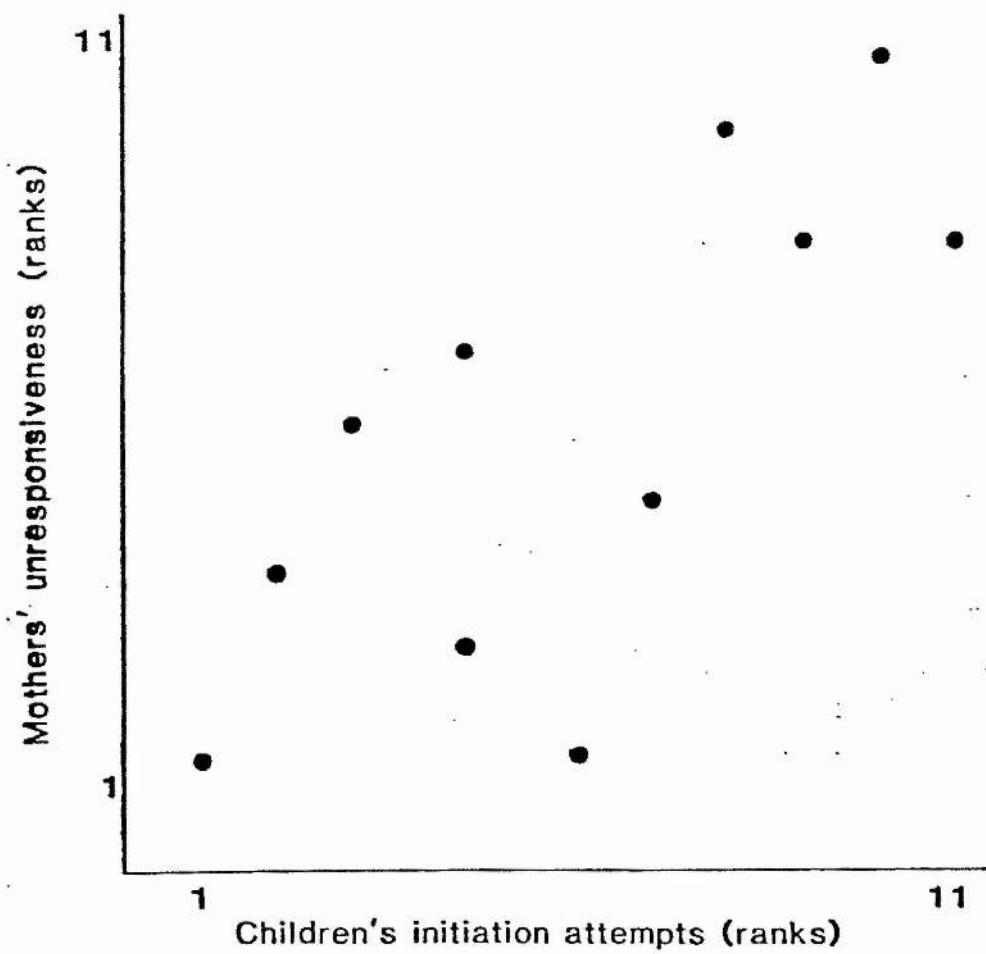


TABLE 5.2 to show: Language Subscale taken from BSID, MDI Scale (Bayley, 1969)

VOCALIZATIONS

- 13 Vocalizes once or twice
- 21 Vocalizes at least 4 times
- 30 Vocalizes 2 different sounds

Vocalizations and Words

- 55 Vocalizes attitudes
- 79 Vocalizes 4 different syllables
- 85 Says "da-da" or equivalent
- 101 Jabbbers expressively
- 113 Says 2 words
- 127 Uses words to make wants known
- 136 Sentence of 2 words

Verbal Comprehension

- 84 Listens selectively to familiar words
- 89 Responds to verbal request
- 106 imitates words
- 117 Shows shoes or other clothing or own toy

Naming Objects

- 124 Names 1 object
- 138 Names 2 objects
- 146 Names 3 objects

Naming and Pointing to Pictures

- 130 Names 1 picture(s)
- 141 Names 3 pictures
- 149 Names 5 pictures
- 132 Points to 3 pictures
- 139 Points to 5 pictures
- 148 Points to 7 pictures

Prepositions

- 158 Understands 2 prepositions
- 163 Understands 3 prepositions

The children's total language scores (out of 25) were calculated, and found to be as follows:

TABLE 5.3 to show BSID Language Subscale Totals

Rhona:	21
Laura:	20
Kate:	15
Lyn:	16
Christy:	16
Jemma:	15
Suzi:	23
Angela:	21
Louise:	10
Ailsa:	13
Patricia:	15

These scores (Table 5.3) were ranked, and correlated with both mothers' question usage and mothers' use of positive commands (see Fig. 5.5 and Fig. 5.6). It was found that there was a significant positive correlation between mothers' Simple Question usage and children's language subscale score, ($r_s = 0.75$, $p < 0.01$), and a non-significant positive correlation between mothers' Complex Question usage and children's language subscale score, ($r_s = 0.40$, $p > 0.05$). There was a negative but non-significant correlation between mothers' use of commands and children's language subscale scores, ($r_s = -0.26$, $p > 0.05$). Similarly, there was no relationship between mothers' Unresponsiveness and children's language subscale scores, ($r_s = 0.03$, $p > 0.05$).

5.5 Discussion

(a) Directiveness

The data thus firstly suggest 2 global and distinctly different speech styles amongst mothers of DS children: a "questioning" style, described thus because it is characterised by frequent use of particularly Simple, but also Complex questions and a relatively small proportion of Commands, and a "commanding" style, thus termed as it is characterised by a frequent use of Commands and a relatively small proportion of both Simple and Complex questions. It is argued that "questioning" mothers are attempting more to foster their children's active vocal/verbal participation in interaction, by the use of questions rather than commands to direct play, whilst "commanding" mothers use a style which makes very few demands on the child linguistically, as Commands, which form the greatest proportion of these mothers'

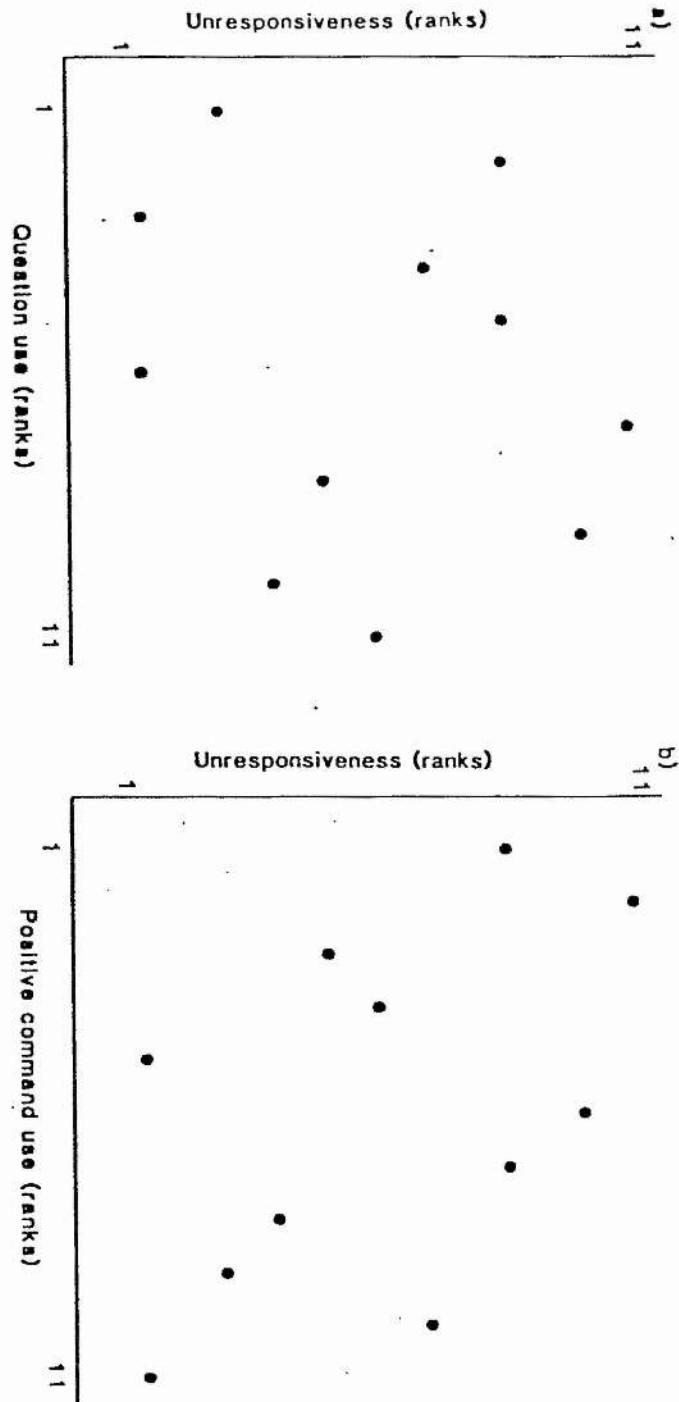


Fig. 5.4 Correlations between mothers' unresponsiveness & a) mothers' question use, & b) mothers' positive command use.

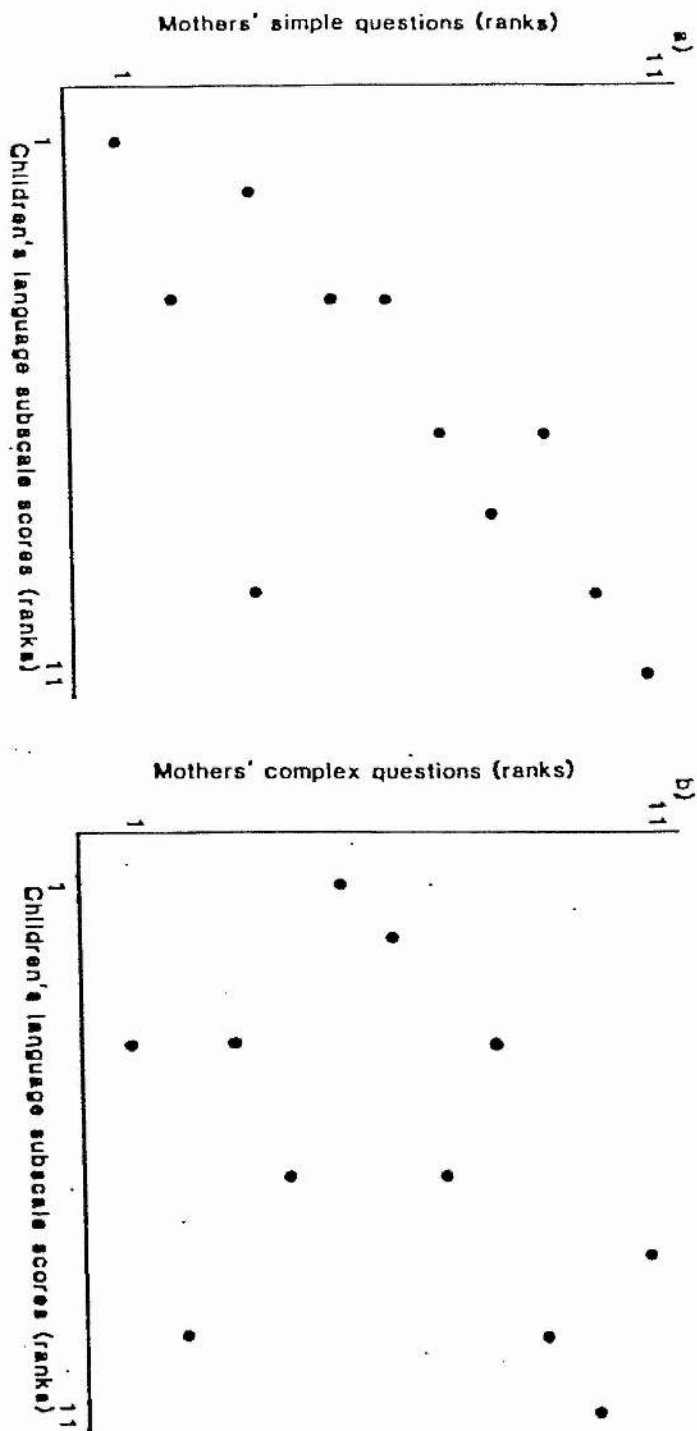
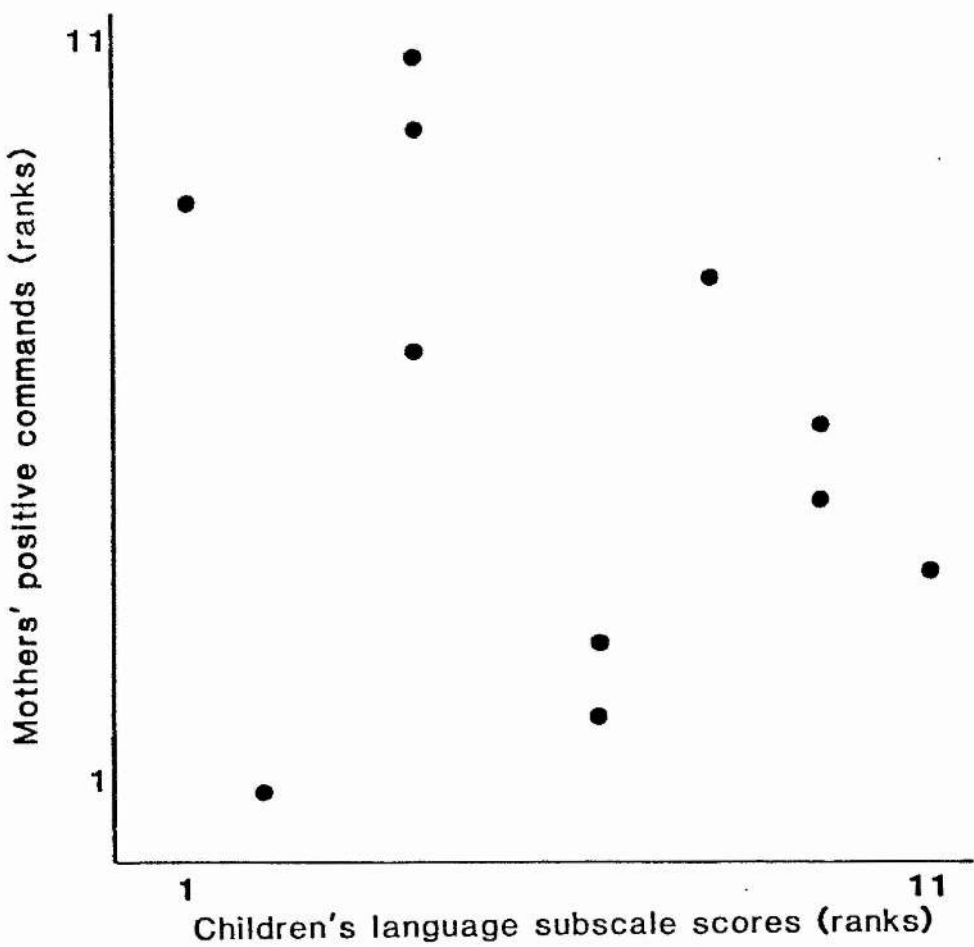


Fig. 5.5 Correlations between children's language subscale scores & a) mothers' simple question scores, & b) mothers' complex question scores.

Fig. 5.6

Correlation between children's language subscale scores & mothers' positive command scores.



speech, demand little vocal/verbal response. The lack of any other significant inter-group differences revealed by the ANOVA is perhaps due in part to experimenter effect: it is unlikely, for example, that any mother would use many negative commands or prohibitions in front of "The Psychologist", hence the very small numbers of these observed. Likewise imitation seeking too could be inhibited by the Experimenter's presence, although it is perhaps more likely that this behaviour and that of Toy Introduction are simply equally distributed amongst mothers of both groups.

(b) Unresponsiveness

The finding that the more children attempt to initiate interactions, the more their mothers ignore such attempts, ($r_s = 0.74$, $p < 0.01$) suggests that all mothers tend to respond to a small and limited number of their children's initiations of interaction: indeed, children initiated an average of between 1 and 17 interactions (with a mean of 7.6 and a S.D. of 4.0), of which mothers responded to between 1 and 8, (with a mean of 4.6 and a S.D. of 2.0). Whilst Unresponsiveness does not appear to correlate significantly with either Complex Question usage, Simple Question usage or Positive Commands, there is a tendency (albeit nonsignificant) for "commanding" mothers to respond more to their children's initiations of interactions ($r_s = 0.49$, $p > 0.05$).

This would paint the picture of mothers in this group providing their offspring with a very "all or nothing" type of stimulation, with the style fluctuating from total parent control and minimal child participation on the one hand, to total child direction on the other, with little use of questions to provide some sort of middle

ground. The possibility should perhaps be considered that this latter group of mothers may be responding to their children as if they were developmentally much younger (although this is not in fact the case). Due to this, they may not differentiate their responding quite so much as do the other mothers, thus responding to a greater proportion of their children's attempts to initiate - regardless of the "quality" of these attempts - but still maintaining a high degree of control by the use of commands, as this might be seen as a suitable strategy for a child perceived as developmentally young. Mahoney (1975) argues that language intervention programmes themselves foster a more specific level of responsiveness in mothers of developmentally delayed children, such that positive reinforcement is far more contingent upon both semantic and syntactic correctness than is the case with the "normal" child. Given that the mothers in both groups participate in similar, if not the same, intervention programmes, (and furthermore, the division between the two groups does not represent a social class divide), it seems unlikely that such external factors engender these differences although as will be discussed in more detail below, the possibility of the 2 groups being different in their perceptions of their DS children cannot be ignored.

(b) Children's Assessments

The lack of maternal speech style correlation with children's overall BSID scores is not in contradiction to the finding of several researchers in this area (e.g. Rondal, 1978) that maternal speech style is specifically geared to the child's language level; given the acknowledged specific difficulties of children with DS in

the area of language (Gibson, 1975; Johnson and Olley, 1971; etc.), and the gap that this tends to cause between overall development and language development (e.g. Cunningham et al, 1983) it might perhaps be expected that maternal speech style would be more likely to correlate with a specific language score, as it indeed does, than with an overall measure of development. Of more interest is the finding that whilst Simple Question use is significantly correlated with child's language level ($r_s = 0.75$, $p < 0.01$), this is not the case for Complex Questions ($r_s = 0.40$, $p > 0.05$) or even more strikingly, use of Positive Commands ($r_s = -0.26$, $p > 0.05$). Thus it seems that whilst the more able children are asked more Simple Questions (or perhaps that greater use of Simple Questions produces more able children), this is not significantly the case insofar as Complex Questions are concerned - a finding which is perhaps surprising, given that it might be hypothesised that the more able children would elicit and/or would gain more benefit from questions that demanded more than a yes/no/gesture answer, thus enabling them to use their increasing vocabulary and syntactic skill.

Likewise, the near total lack of correlation between children's language ability and mothers' use of positive commands is somewhat surprising. Again, it might be hypothesised that mothers would use more positive commands with the least able of language learning children (or conversely, that greater use of commands would foster less advanced language): such a trend is only barely perceptible, and certainly does not begin to approach significance. In short, whilst Simple Question use is evidently associated with child's language level, Complex Question use only shows a slight and insignificant trend in this direction, and the use of Positive

Commands seems almost arbitrary.

It is, of course, impossible to determine from this data whether mothers' use of Simple Questions is elicited by the child's language level or whether it in fact causes it. However, comparisons of these above correlations with those obtained 6-9 months later can perhaps serve to begin to untangle some of the web of child-elicited versus mother-elicited factors, within the constraints imposed by the use of the correlation statistic.

5.6 Children's Later Language Development

Results

Aspects of maternal speech style, as described here, were thus compared with children's later language development, as assessed approximately 6 to 9 months later, and as described in Chapter Four. The 2 groupings of mothers, "questionning" and "commanding" were compared with the 2 groupings of their DS children, productive and receptive, as obtained from the later language assessments, and a Fisher's Exact test was conducted.

TABLE 5.4

	Children	
	Receptive	Productive
Mothers		
Questionning	1	5
Commanding	4	1

The probability thus yielded was found to approach but not reach significance ($p = 0.065$).

Mothers' use of questions (in ranks) was then correlated with children's ranked noun ratio scores (see Fig. 5.7). It was found that there was a significant correlation between later noun ratio scores and mothers' use of Simple Questions ($r_s = 0.68$, $p < 0.05$), but that the correlation between noun ratio and mothers' use of Complex Questions did not reach significance, ($r_s = 0.48$, $p > 0.05$).

Mothers' use of positive commands was likewise ranked and correlated with children's later noun ratio scores (see Fig. 5.8). There was a significant negative correlation found between use of positive commands and noun ratio scores ($r_s = -0.61$, $p < 0.05$). There was again no significant relationship between measures of maternal Unresponsiveness and these later language measures ($r_s = 0.22$, $p > 0.05$).

Finally, children's language subscale score was correlated with their later noun ratio, and the correlation was found to be significant ($r_s = 0.72$, $p < 0.05$).

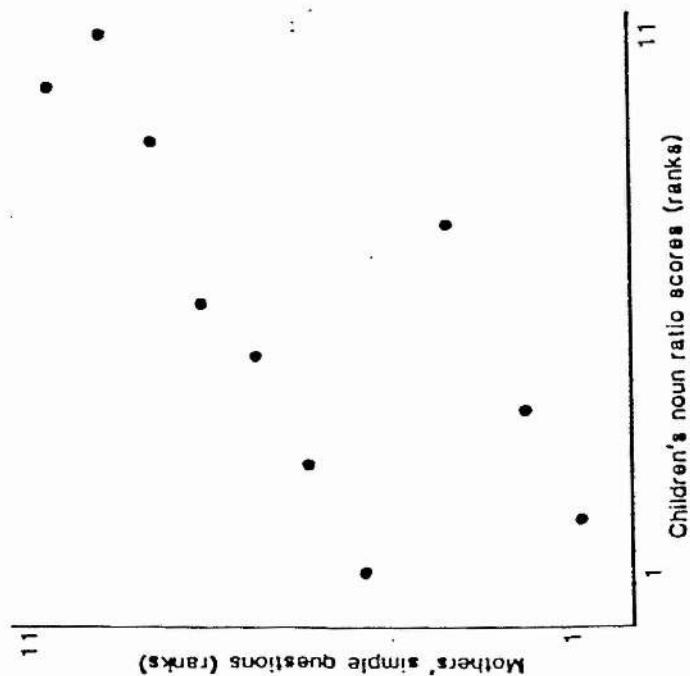
5.7 Discussion

In making these comparisons it should be borne in mind that the language subscale measure used in the present experiment and the later Noun Ratio measures are not identical and can thus be regarded as only partial guides to the child's language development. (For a fuller discussion on the problems of language assessment in DS children, see Chapter Four).

Notwithstanding such considerations, the associations found between maternal speech style and later child development are of some interest, and together with the near-significant Fisher's Exact test result serves to reinforce the notion of 2 overall types of

Fig. 5.7

A: Correlation between children's noun ratio scores & mothers' simple question scores.



B: Correlation between children's noun ratio scores & mothers' complex question scores.

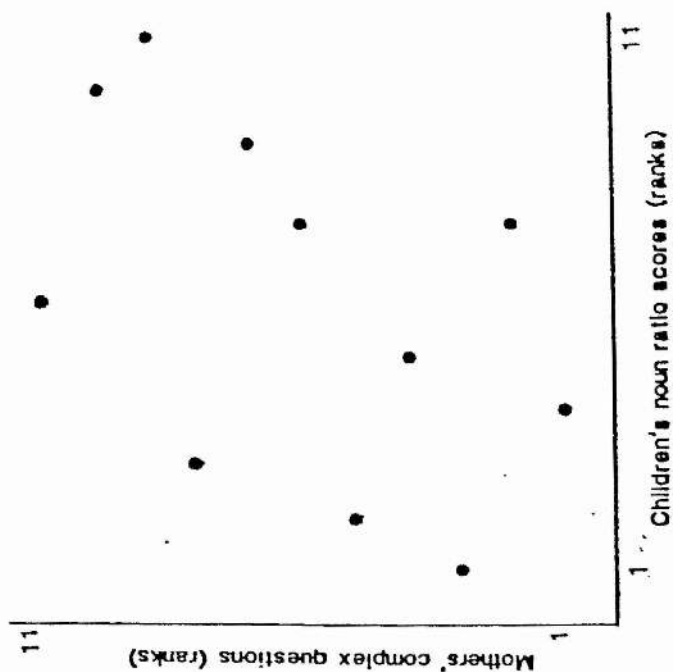
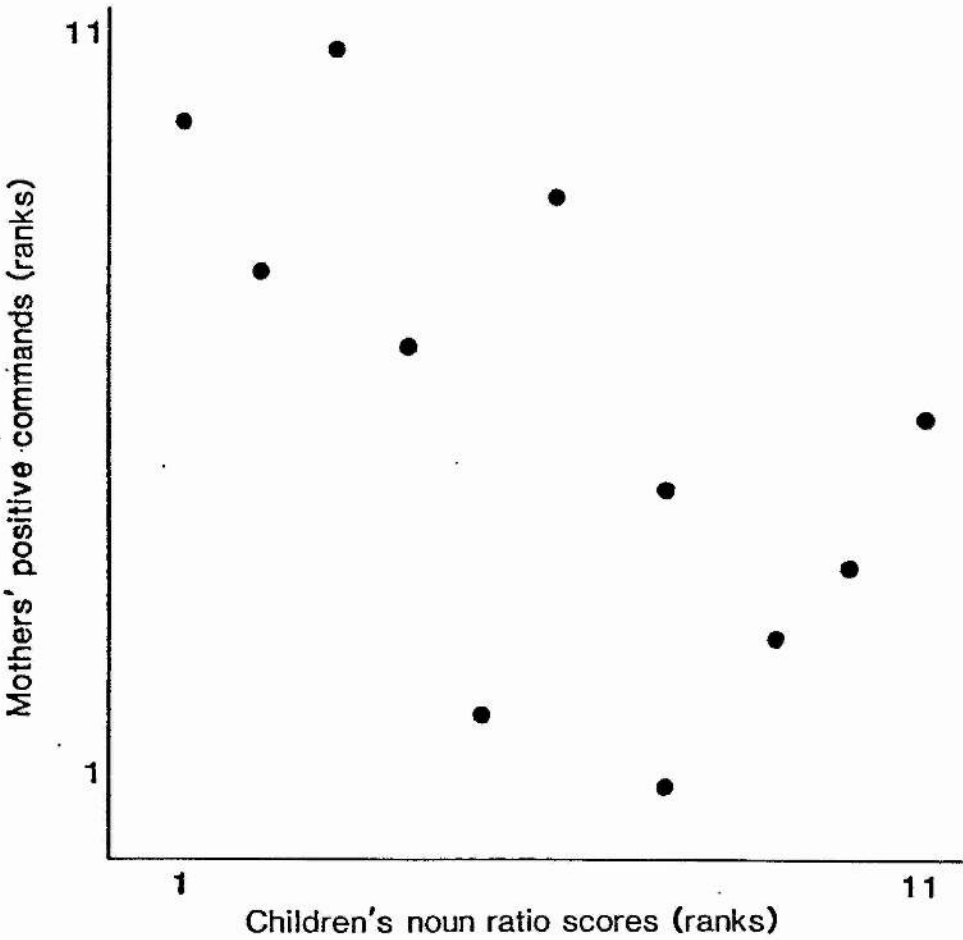


Fig. 5.8

Correlation between children's noun ratio scores & mothers' positive command scores.



maternal speech style.

Maternal use of Simple Questions is still correlated significantly with this later measure of child language, but it will be noted that the significance of the correlation is reduced ($r_s = 0.68$, $p < 0.05$), whilst the correlation between mothers' use of Complex Questions and this later language measure is increased, and whilst it is still not significant, has begun to approach significance ($r_s = 0.48$, $p > 0.05$, the critical value for r_s being 0.535). Thus whilst this data cannot shed light on whether the use of Simple Questions is mother or child elicited, there is a tentative suggestion within this pattern of correlations that whilst to some extent Complex Questions are child elicited, this is not the full answer and the increased use of them by mothers is perhaps a factor enhancing child's language growth.

Similar, but far more striking, is the pattern of correlations for mothers' use of Positive Commands. It will be recalled that this present experiment suggests that there is only a very small, nonsignificant and negative relationship between mothers' use of these commands and child language level: the latter does not appear to be a factor eliciting this particular component of nonlinguistic direction from mothers. However, correlations between this speech style and children's later achievement reveal a strikingly opposite picture, and one in which the significant negative correlation ($r_s = -0.61$, $p < 0.05$) lends weight to the suggestion that this originally unmatched-to-child (and thus arguably not child-elicited) speech style is associated with later less able language development. Indeed, within the limitations imposed by the use of the correlation statistic and the 2 differing types of language assessment it can

perhaps be claimed that such data suggest that this speech style is not maximally beneficial to the child's linguistic progress. Likewise, Mahoney and Seely (1976) argue that the use of commands, whilst perhaps being easier for MH children to understand, does not provide a progressive linguistic model and may be particularly detrimental to children's learning of syntax.

The level of maternal Unresponsiveness seems to make almost no impact on nor bear any relationship to the children's present or later language styles and indeed, data here can suggest no more than that it is a purely idiosyncratic maternal behaviour and its significance, if any, perhaps lies outwith the realm of specific language skills and development. (Once again it is perhaps worth noting Dunn (1977) who stated in relation to "normal" child development that a child's experiences of a caregiver whose responses are promptly contingent on the child's initiations gives that child a sense of competence and effectiveness that contributes to a developing mastery of the object world. It is perhaps the case within DS development that mothers' differing levels of Unresponsiveness to children's initiations have their major effect, if any, in other areas of development).

In short, it appears that the more "questionning" is a mother's style, so too is it more likely that this will be in step (at least insofar as Simple Questions are concerned) with her child's language level, which is in turn likely to be relatively more advanced and moreover, is likely to maintain its relative advancement over time. Furthermore, mothers' speech style appears to maintain its congruence with the child's development, such that either the major characteristic of the "questionning" mothers'

speech style - Simple Questions - or a measure of the child's language level - such as the language subscale - appear to be very similarly predictive of the child's later language development.

Conversely, however, the more "commanding" is a mother's speech style, so too the more she appears to be detached (at least insofar as Positive Commands are concerned) from her child's language level. However, this early lack of a strong relationship seems to resolve itself, such that at a later date, children's language scores are almost as well predicted by earlier maternal speech style (in the form of Positive Commands, as the dominating characteristic), as they are by children's earlier language assessment.

5.8 Self-Fulfilling Prophecies

This resolution of the early detachment of some aspects of maternal speech and child language level into the later found match of mother-child communication can perhaps be seen as evidence of a self-fulfilling prophecy. The picture is certainly not one of particular clarity or simplicity. However, for the hypothesis to hold that mothers' use of positive commands is elicited by their children's language needs, it might be expected that the correlation between positive commands and child language level would be higher than -0.26 , and the subsequent significant negative correlation between this aspect of maternal speech and later child language does suggest the possibility that this specific maternal speech style may at the least not be exerting a positive effect on child language, and may indeed be deleterious, although again, the possibility must be acknowledged that the causative agent is in fact some unmeasured

aspect of the child's ability.

If the use of positive commands is not particularly prognostic of enhanced linguistic progress in the child, then the question can be raised as to what it is that might engender such a style in some mothers.

Given that there is almost no association between language level and Positive Command use, and indeed, relative to that of Simple Questions, little association between language level and Complex Question use, what is it that prompts all mothers to avoid the use of the latter (relative to their use of Simple Questions) and for some, to adopt a vigorous use of the former?

In an attempt to at least partly answer these questions it is perhaps useful to look at the results of the experiment described in Chapter Three, dealing with the effects of the DS label on the interactive behaviours of mothers of DS children. In brief, the experiment looked at the ways in which mothers interacted with a preschool child they believed had DS, but who in fact was perfectly "normal", in comparison to how they interacted with this child's twin sister, who was described to them as "normal". This experiment revealed a distinct style of maternal interaction part of which appeared to be activated in response to the label DS being applied to the "normal" child. This style was characterised by mothers using significantly more Simple and significantly fewer Complex questions towards the DS labelled child than towards the "normal" child, by their ignoring a greater proportion of her attempts to initiate interactions than they did of her sister, and by their using more positive commands (albeit insignificantly more) towards her than towards her "normal" sister.

For each mother who participated in that study, the difference between the frequency of each behaviour shown towards the "DS" labelled twin and that shown towards the "normal" labelled twin was taken as an "index" of stereotyping effect. This was calculated for all behaviours which were found to differ significantly in mothers' frequency of use with H and S (the twin sisters), namely Simple Questions, Complex Questions and Unresponsiveness, and also Positive Commands, for whilst this did not differ significantly in the frequency of mother's use with H and S, there was a nonsignificant tendency for mothers to be more commanding with the DS-labelled child, a tendency which was perhaps reduced by the "dampening effect" of the laboratory environment, as will be discussed below (see also Fig. 5.9). Moreover this use of commands did not appear to relate to the concomitant language level of this child. Thus it might be hypothesised that this latter characteristic of maternal speech may be engendered in part by the DS stereotype and/or inappropriate expectations for the DS child.

The index of stereotyping for each of the aforementioned categories was thus ranked and correlated with the corresponding ranked behaviour frequencies shown by mothers in this present study with their own DS child. It was found that neither Complex nor Simple Question use correlated with the respective indices of stereotyping ($r_s = 0.021$ and -0.197 , respectively) Unresponsiveness too showed no significant correlation with the Unresponsiveness index of stereotyping ($r_s = -0.352$, $p > 0.05$). Whilst this calculation is not significant, it seems almost paradoxical that it should be negative and perhaps reflects, more than any labelling effect, the different ways in which mothers treat their own child

and a child who is totally unknown to them and in a laboratory setting.

In contrast to this lack of significant relationships, the correlation between mothers' use of Positive Commands with their own child and the Positive Command index of stereotyping was significant ($r_s = 0.55$, $p < 0.05$).

As stated above, however, mothers did not show a significant stereotyping effect with the DS labelled twin, insofar as Positive Command use was concerned. Perhaps therefore, the present significant correlation is evidence of the hypothesised interaction between mothers' tendency to stereotypic beliefs or negative expectancies and children's actual behaviour, as discussed in Chapter Two. Insofar as Positive Command use is concerned, it is perhaps those mothers who are most prone to holding negative beliefs which they see as being confirmed as appropriate by certain aspects of the child's behaviour, who thus show a greater use of Positive Commands. Hence, when interacting with the DS labelled child, the stereotypic tendency was present, but did not reach significance as not "confirmed" as appropriate - even in mothers most susceptible to it - by S's "normal" behaviour.

In addition, the possibility must be raised that a behaviour such as positive commands which is arguably a very overt form of maternal control over interaction, would be repressed by the laboratory environment in which the experiment with H and S was conducted, particularly as mothers were interacting with a so-called DS child whom they had never before met. Comparisons of the data obtained in this present home-based study were therefore made both with the data collected for mothers interacting with H and S, and

also with similar analyses made of mothers interacting with their own DS children in the laboratory environment.

As described in Chapter Three, at the end of the experiment conducted with mothers and the labelled twins, after mothers had been "debriefed" as to the true purpose of the experiment, mothers were recorded interacting with their own DS child in the same room and with the same toys as used in the experiment with H and S. Despite these similarities, before any comparisons are made it should be noted that the conversations between the Experimenter and each mother in the debriefing discussions may have exerted an effect on mothers' interactive behaviour if they felt that it was they, and not their children, who were being observed. Reference to Fig. 5.9 illustrates the "dampening effect", however, that the laboratory environment appears to have had, particularly insofar as the use of commands is concerned. Mothers used a mean proportion of 26% of positive commands in their speech in the home but this drops by over half to some 11% when with their own child in the laboratory and to 6% when with the unknown DS labelled twin in the laboratory. (It is at its lowest, 5%, when they are with the "normal" child in the laboratory).

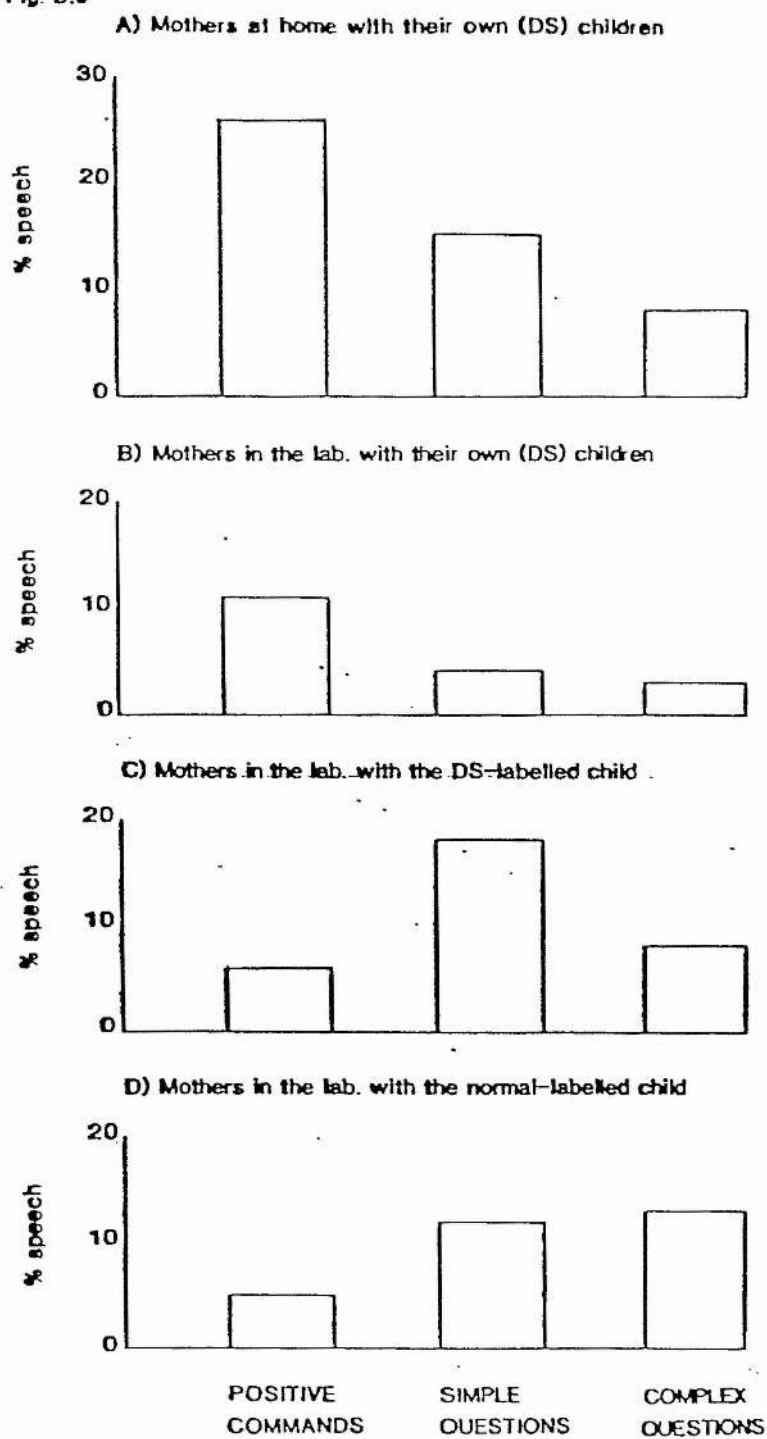
Thus it could be that the apparent effect seen in Fig. 5.9(B) of the laboratory environment subduing mothers' use of positive commands is particularly effective when in addition to the strange environment, mothers do not know the so-called DS child. Thus they only use slightly more positive commands to her than to her sister.

Perhaps even more striking, however, is the pattern of mothers' use of Simple and Complex questions in the differing situations. Although as seen in Fig. 5.9(B), these 2 aspects of

behaviour seem fairly subdued in the laboratory when with their own children (perhaps due to some effect of the debriefing discussion), overall, whether with their own DS child or with the DS-labelled child, mothers always show the same pattern of more simple than complex questions (see Fig. 5.9 A, B, and C). Only with H, the "normal" labelled child, is this pattern reversed, mothers using more complex than simple questions in interaction with her (see Fig. 5.9(D)).

Thus, overall, the finding of a significant correlation between mothers' positive command use with their own child and the index of their use of this behaviour in the labelling experiment can perhaps be used to further elucidate the picture of the "commanding" mother, for it suggests that she uses a speech style which is not only unrelated to the child's language level, but one which has its roots in mothers' distorted perceptions of and negative expectancies for her child, as partly engendered by the DS label. What then may be said to be revealed by the negative correlation existing between mothers' earlier use of positive commands and the children's later noun ratio scores, where originally no such correlation existed between this maternal behaviour and the child's concomitant language level, is evidence of a self-fulfilling prophecy. The evidence for this is enhanced by the fact that whilst mothers' indices of stereotyping show a significant correlation with mothers' behaviour with their own children, and whilst this in turn correlates significantly with the children's later language competence, these latter scores show a much reduced and nonsignificant correlation with mothers' indices of positive command stereotyping ($r_s = -0.380$, $p > 0.05$). Thus in

Fig. 5.9



keeping with an hypothesis of a self-fulfilling prophecy this pattern of correlations suggests that any causative link progresses from mothers' stereotype, through their behaviour and hence to affecting the children's competence, rather than it being the children's competence which wholly engenders the maternal stereotype.

5.9 Summary and Conclusions

In summary, it is again acknowledged that the use of the correlation statistic cannot be taken to imply causality. However, it is argued that it can be used as an indicator of associations that are significant enough to warrant investigations of causality, and that is perhaps the conclusion to be drawn from this present study. The data presented here, tempered though they must be by methodological considerations, suggest that the susceptibility of some mothers of DS children to a labelling effect may be associated with their adoption of a speech style which is not maximally conducive to DS children's language development and indeed, may result in a self-fulfilling prophecy. Other mothers in this sample, however, showed themselves to be less susceptible to such a labelling effect, particularly insofar as positive commands were concerned and in contrast, they tended to use a more "questioning" style with their children, characterised by a greater use of questions than commands and one which, unlike those of the other mothers described above, appeared to be more accurately matched to their children's language level and showed no evidence of being detrimental to their language development. However, even within the data from this more successful group, there is a suggestion that the

use of the more demanding question form - Complex Questions - is not being geared to the child's language level but that when it is used, improvements are found in children's subsequent language. This suggests too that the adoption of a greater number of Complex questions in maternal speech, particularly with more linguistically able DS children, may also serve to enhance their language abilities. Indeed, consideration of the overall findings of the "questioning" mothers and their children in this sample evokes Cheseldine and McConkey's (1979) observation, as cited above, that for DS children, appropriate linguistic input may not mean adequate linguistic input. To this, the results of this present study would suggest the addition of the observation that if the speech styles adopted by some mothers are found to be inappropriate then this may also mean that more than just inadequate, they are also found to be actively detrimental.

CHAPTER SIX

MOTHER AND DS INFANT INTERACTION:
THE FIRST SIX MONTHS

6.1 Introduction

As previous chapters have illustrated, within the preschool years, DS children and their mothers show peculiarities and idiosyncracies in their interactions that are not found in the nonhandicapped language learning child and her/his mother. Reference to research conducted with nonhandicapped infants points to the early months of life and the mother-infant interactive relationship then found as an important precursor to later linguistic communicative abilities (e.g. Stern, 1977) and indeed, as the review chapter (Chapter One) again indicates, much research with very young DS infants, also outlines early delays and deficiencies, both in the infants' own communicative repertoire and in her/his caregiver's concomitant interactive behaviours. This chapter thus attempts to investigate both mothers' attitudes to their DS infants and their commensurate communicative behaviours, and the DS infants' development, both as interactive partners and in more global terms as assessed by standard developmental tests. Specifically, in comparison with matched nonhandicapped infants, this study will test the following hypotheses, in a longitudinal study conducted over the first 6 months of the infants' lives, (these hypotheses are drawn from both the earlier review of the available literature and the findings presented here for preschool DS children):

- (a) It is firstly hypothesised that DS infants will show significantly lower developmental assessment scores than nonhandicapped infants, (as for example, found by Cunningham, 1979).
- (b) It is hypothesised that DS infants will be less initiating in interaction with their mothers than nonhandicapped infants, and that they will be less responsive than their nonhandicapped peers (Jones,

(1980), for example, reported observations of this type made of the DS infants in her sample, who were aged 8 to 19 months).

(c) It is further hypothesised that mothers of DS infants will be more initiating or directive of interaction than matched mothers of nonhandicapped infants, and less responsive to their infants than control mothers. (As will be noted in the above Chapters One and Three, observations such as these have been made of mothers of preschool DS children by several researchers and indeed, work by Berger and Cunningham (1983) suggests that reducing the levels of behaviours such as directiveness and promoting greater responsiveness in mothers of young DS infants may foster improved development of these infants' early communicative behaviours).

Note

It should be noted that the study presented here represents several deviations from its original formulation. Firstly, insofar as the longitudinal infant study from birth is concerned, it was originally proposed that a 3 group design be employed: a group of DS infants and a group of matched nonhandicapped controls, as presented here were to be studied, but also a group of infants diagnosed at birth with congenital heart disease (CHD) of a type serious enough to merit surgery or the possibility of surgery in the future, was also to be included. This CHD group was desired because it was considered important to control for differences between the DS and nonhandicapped infants that might be due to the former being "exceptional" infants rather than due to their specific genetic condition. Thus, for example, many DS babies are separated at birth from their mothers (Murdoch, 1983) and may evoke more of a sense of

anxiety and helplessness in their mothers than is perhaps the case for women with even their first baby (Murdoch, 1983). Of necessity, they also attract more medical attention than might be given to the "normal" neonate, which might again affect mothers' perceptions of their children. CHD thus provided a control for all these factors (see, for example, de Trautenberg, 1973) without, in itself, being mentally (or indeed, physically) handicapping. It is in addition, of course, found quite commonly in DS children (Cunningham, 1982).

Unfortunately, however, despite many hospitals within the region giving their support to these proposals and agreeing to participate, only one infant with CHD was ever referred to the project throughout the 18 months in which the sample was collected. It was thus impossible to study this third proposed group.

In addition, a larger sample of DS infants was expected based on estimates from the size of the catchment area and the length of time over which the group was collected. Again, factors beyond the control of the Experimenter intervened: one major hospital declined to participate in the study and of those who did, not all the DS babies born over the year were referred. The effect of any such selective referral will be discussed more fully below, suffice to note that in the county of Fife alone, only 4 of the 9 DS babies born in the period 1982-83 were in fact referred to the project for reasons that included the paediatrician and/or the GP's fear that the mother might be on the verge of rejecting the baby.

Finally, the original research proposals also included plans to study longitudinally a sample of DS, nonhandicapped and CHD infants from nine months of age to 18 months of age, in an attempt to bridge the gap between the infancy studies and the later preschool group. Again, despite agreements to co-operate from various hospitals, only

one DS and one CHD child were referred throughout the period of study. This part of the project thus also had to be abandoned. The necessity for such a study is again discussed in some detail below.

6.2 Method

Apparatus

- (a) Sony black and white video equipment (camera with zoom lens, recorder and TV monitor) and 1/2" Sony video tapes.
- (b) BSID (Bayley, 1969) testing materials and score sheets.
- (c) Maternal Attitudes and Perceptions questionnaires, as detailed in Chapter Two.
- (d) Pre-recorded video of three nonhandicapped infants, as detailed in Chapter Two.

Subjects

Six DS infants and 6 nonhandicapped infants and their mothers participated in this study. The DS infants were all born within the period May 1982 to June 1983 and within Central Scotland. The nonhandicapped infants were likewise born within this time period and geographical region and whenever possible, each nonhandicapped infant was the first baby born after the birth of a DS infant at the same hospital, matched to the DS infant for the following variables: infant's sex and gestational age and mother's age, socioeconomic level, number, age and sex of other children (if any) and neighbourhood (thus urban infants were not matched with those from rural areas).

Table 6.1 presents a summary of the sample of DS and nonhandicapped infants, with details of the relevant demographic variables.

TABLE 6.1

Table to show: demographic features of the study sample

Name	Infant's Sex	Gestational Age	Mother's Age	Father's Age	Mother's Occupation	Father's Occupation	Neighbourhood	Other Children
Hannah *(DS)	F	Premature	31 yrs	29 yrs	Housewife	Accountant	Town	None
Gillian *(NC)	F	Premature	31 yrs	29 yrs	Housewife	Bank Supervisor	Town	None
Hazel (DS)	F	Full-Term	30 yrs	32 yrs	Housewife	Surveyor	City	F: 3 yrs
Shona (NC)	F	Full-Term	32 yrs	33 yrs	Housewife	Computer Analyst	City	F: 3 yrs
Jemma (DS)	F	Premature	28 yrs	30 yrs	Housewife	Auditor	City	None
Laura (NC)	F	Premature	25 yrs	28 yrs	Housewife	Electrician	Town	None
Alistair (DS)	M	Full-Term	46 yrs	46 yrs	Housewife	Unemployed Semi-Skilled Teacher	Village	M: 3 yrs + 3 Adult Siblings
Roddy (NC)	M	Full-Term	35 yrs	44 yrs	Housewife		Village	M: 2 1/2 yrs F: 5 1/2 yrs
Neil (DS)	M	Full-Term	22 yrs	25 yrs	Housewife	Unemployed Unskilled	Town	F: 2 yrs
Jamie (NC)	M	Full-Term	21 yrs	22 yrs	Housewife	Unemployed Unskilled	Town	F: 2 yrs
Robin (DS)	M	Full-Term	33 yrs	36 yrs	Housewife	Teacher	Town	M: 2 1/2 yrs
Colin (NC)	M	Full-Term	33 yrs	38 yrs	Housewife	Computer Technician	Town	M: 3 yrs

* DS = Down's Syndrome

NC = Nonhandicapped Control

N.B.: All of the above statistics applied and were correct at the time of the birth of the infant.

As will be noted, only in the case of the DS infant Alistair was a strict match impossible to obtain, due to his mother being much older than average, and to her having 3 fully grown children (aged 19, 21 and 23 years).

General Procedure

(a) Parental Consent

In the case of each subject, the mother was asked about participation in the study whilst still in the maternity hospital. This initial request was always made by the paediatrician concerned with the infant, and the exact timing of this request was at the discretion of this doctor. In the case of the DS infants, this would thus depend upon the timing of giving the DS diagnosis to the parents and upon their reaction to this. In most cases, this was done within the first 3 weeks of the infant's life. In the case of the control infants, permission was requested before the mother and infant were discharged from hospital, thus within the first week of the baby's life.

After consent had been given by the parents, the paediatrician contacted the present Experimenter, who then in turn contacted the parents and arranged to visit the mother and newborn child at their home. At this initial visit, the nature and purpose of the project were explained and discussed and the parents were given an opportunity to ask any questions about the study and their participation in it. In the case of each of the subjects, this introductory visit was made before the infant's six-week birthday.

(b) Timetable of the Longitudinal Study

Following this initial, introductory visit, the study proper proceeded as follows:

- (i) Visit 1 at infant's six week birthday,
- (ii) Visit 2 at infant's three month birthday,
- (iii) Visit 3 at infant's four and a half month birthday, and
- (iv) Visit 4 at infant's six month birthday.

All visits were made by the present Experimenter and all observations, testing, recording, etc. were carried out in the infant's homes. At each visit, the infant was assessed using the BSID (Bayley, 1969), and a videorecording was made of the mother and child during a feed and/or play situation. In addition, after each visit, the Experimenter noted any additional observations or details in an informal "diary", kept for each subject. Finally, at the third visit (at the infants' four and a half month birthdays), an Experiment was conducted with the mothers involved in the study to assess their attitudes to and perceptions of children labelled or diagnosed as having DS. This timetable can be summarized as in Table 6.2.

6.3 BSID Assessments

Procedure

The assessment was conducted as detailed in the BSID manual (Bayley, 1969), the Experimenter having first been instructed in the use of the Scales by an Educational Psychologist, and having practised the assessment technique on several infants aged between 5 weeks and 6 months. In every case, the assessments were conducted when the infants were alert, but not distressed, or hungry. Before conducting the assessments, the Experimenter spent some time getting

TABLE 6.2: Timetable of longitudinal study

Visit	BSID Assessment	Video- Recording	Attitudes Experiment	Informal Diary
1. 6 weeks	√	√	x	√
2. 3 months	√	√	x	√
3. 4 1/2 months	√	√	√	√
4. 6 months	√	√	x	√

to know the infant, to ensure that both infant and mother were relaxed with the Experimenter. The assessments were usually conducted with the infant seated on her/his mother's lap.

In accordance with the manual, the raw scores thus obtained were then converted into Mental Development Index (MDI) scores and Psychomotor Development Index (PDI) scores, and those obtained for the DS infants were compared with those obtained for the nonhandicapped control (NC) infants at each visit across the 6 month period, using an analyses of variance.

Results

Two separate analyses of variance were conducted, the first comparing the DS and NC infants' MDI scores, and the other, their PDI scores. Table 6.3 presents a summary of these data.

The first ANOVA (groups x visit) revealed a significant main effect of groups ($F = 7.93$, with 1 and 10 d.f., $p < 0.02$), and a significant main effect of visit ($F = 14.75$, with 3 and 30 d.f., $p < 0.001$), but no significant interactions.

Likewise, the analysis of PDI scores revealed a significant main effect of groups ($F = 9.04$, with 1 and 10 d.f., $p < 0.01$), a significant main effect of visit, ($F = 26.04$, with 3 and 30 d.f., $p < 0.001$) and no significant interaction.

Discussion

The finding of a significant main effect of groups in both analyses is not altogether surprising given that one group of infants has DS: in both cases, the NC infants are showing a slightly above average group mean score, (specifically, a group mean MDI score of 108 and a mean PDI score of 107), whilst the DS infants

TABLE 6.3

Table to show BSID MDI and PDI scores

MENTAL DEVELOPMENT INDEX						
Down's Syndrome Infants				Nonhandicapped Infants		
6 Weeks	3 Months	4 1/2 Months	6 Months	6 Weeks	3 Months	6 Months
77	102	99	110	107	103	129
68	83	77	73	93	116	129
80	85	107	92	62	108	134
89	96	104	94	58	104	124
56	37*	102	62	72	124	105
70	138	118	98	75	83	128
73.3	90.2	101.2	88.2	77.8	106.3	124.8
Mean Scores						

PSYCHOMOTOR DEVELOPMENT INDEX						
Down's Syndrome Infants				Nonhandicapped Infants		
6 Weeks	3 Months	4 1/2 Months	6 Months	6 Weeks	3 Months	6 Months
50	90	91	96	106	90	104
54	88	69	71	66	134	74
72	103	130	96	61	90	92
72	84	114	96	57	117	104
54	63	91	77	79	150	104
61	101	125	100	86	150	113
60.5	88.2	103.3	89.3	75.8	121.8	98.5
Mean Scores						

* Extrapolated from Naglieri, J. A.: "Extrapolated developmental indices for the Bayley Scales of Infant Development", American Journal of Mental Deficiency, 1981, 85, 548-550.

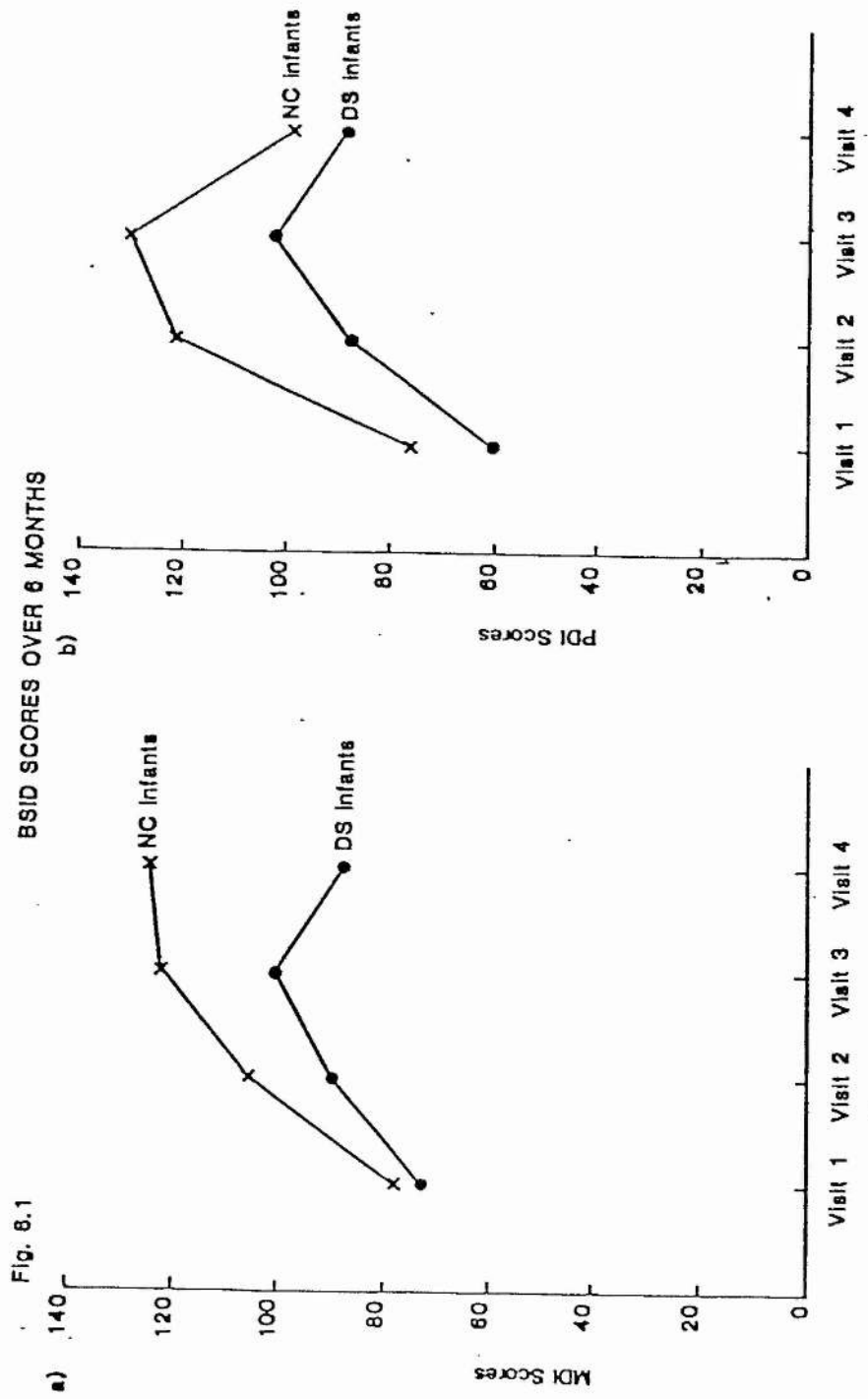
group means fall below average (with a group mean MDI score of 88 and a mean PDI score of 85). Of more interest than this significant difference between the groups is perhaps the finding that the DS infants scores do not fall, on average, outside of the "normal" range (that is below 70), and indeed, many of them at this stage are showing average and even above average developmental indices.

Several possible factors could explain this. Firstly, all the DS infants involved were enrolled in intensive pre-school home intervention programmes, most of which started within the first week or 2 of the infant's life. As several researchers have noted (e.g. Hanson, 1981; Cunningham, 1979; Ludlow and Allen, 1979; etc.) whilst pre-school stimulation programmes may still leave the handicapped child functioning at a below average level, such programmes still tend to result in children achieving significantly more than their not so stimulated peers.

In addition, it has been observed (e.g. Carr, 1970; Cunningham, 1979), that DS infants assessment scores only begin to show their true decline in the second half of the first year. Thus to some extent, developmental indices recorded over the first 6 months only may give a spuriously good impression of the child's capabilities, and indeed, although for neither the MDI nor PDI scores is there any significant interaction with time, reference to Graphs (a) and (b), (Fig. 6.1) suggest that by the sixth month visit, the MDI scores of the DS children may be past their peak, whereas those of the NC infants are perhaps stabilising. However, this pattern is not manifest in the mean PDI scores from the 2 groups, wherein both sets of infants show a similar decline at the fourth (six month) visit. Nevertheless, it has long been recognised

that early developmental quotients may bear little or no relationship to later IQ scores (e.g. Bayley, 1933; Bee, Barnard, Eyres, Gray, Hammond, Spietz, Snyder and Clark, 1982). The differences in assessment scores of all the infants over the visits, and hence the significant effect of visits in both ANOVAs is perhaps indicative of the difficulties in conducting consistently accurate assessments on very young infants. Despite the precautionary measure taken of only conducting the assessments when the infants seemed alert and contented, fluctuations in the infants' moods during the testing sessions were nevertheless impossible to either predict or prevent. (Notwithstanding such observations, given the aforementioned insignificance of the groups x visits interaction in both ANOVAs, both ANOVAs' significant main effect of visits is of interest only at a statistical level).

Finally, in considering the observation that the mean group scores for the DS infants do not fall outside of the "normal" range, it should also be noted that such a finding is not in contradiction to other recent studies in this area. At 6 months of age, for example, the present infants showed a mean MDI score of 88.2, and a range of 62 to 110. Berger and Cunningham (1981), for example, likewise report in their study of mother-infant eye contact in 5 DS infants that at 6 months, the infants in their study showed a mean MDI score of 72.4 and a range of 66-102. Ludlow and Allen (1979) also report that for the DS infants in their pre-school stimulus group, the group mean developmental quotient over the first year was within the "normal" range, specifically being 79.8 as measured by the Griffiths Tests (Griffiths, 1970). The present sample did indeed show a slightly higher group mean, but neither the mean score



or the range is strikingly dissimilar from that reported by Berger and Cunningham (1981). Indeed, considering Ludlow and Allen's (1979) observation of the proportions of their DS sample who were subsequently qualified to attend "normal" schools, the present assessment data can perhaps be added to the slow but nevertheless growing trend to see the DS infant and young child as certainly retarded but not as profoundly as evidence originally suggested.

6.4 Mother-Infant Communication

Procedure

Each infant was videotaped on each visit with her/his mother. Recordings were made during feeds and/or play sessions as the mothers could then usually stipulate an approximate time when they knew their infants were usually awake and receptive, (i.e. around the time of a feed). It was also considered that the mothers involved might feel more relaxed during recording sessions if these were centered on a regular care-giving activity, rather than being totally unstructured. In addition, in an attempt to further put the mothers involved at their ease, the Experimenter spent some time before each recording was made in general conversation with each mother such that all the visits proceeded in a relaxed, friendly atmosphere.

At the end of each set of visits, the Experimenter showed the appropriate videotapes to each mother, and discussed with her the changes in her child over the 6 months, how the videotape would be analysed and any other questions or comments raised. The videotapes for all the subjects were then coded and analysed.

Videotape Analysis: Categories Used

The categories of behaviour for which the videotapes were analysed were adapted from a study by Vietze, Abernathy, Ashe and Faulstich (1978), concerned with the contingent interactions between mothers and their developmentally delayed infants over the first year of life.

All the videotapes were coded for the entire period of observation recorded, (i.e. no time sampling was used), an average of approximately 25 minutes for each visit to a DS infant and approximately 27 minutes for each visit to a NC infant. The maternal behaviours encoded were as follows:

- (a) vocalizes to infant;
- (b) shifts gaze to (looks at) infant;
- (c) looks and smiles;
- (d) vocalizes and looks;
- (e) vocalizes, looks, smiles;
- (f) vocalizes with tactile play;
- (g) looks, smiles, tactile play
- (h) vocalizes, looks, smiles, tactile play;
- (i) averts from infant;
- (j) no behaviour to infant.

The infant behaviours encoded were as follows:

- (a) vocalizes, (excluding coughs, sneezes, feeding noises, etc.);
- (b) shifts gaze to (looks at) mother;
- (c) smiles;
- (d) looks and smiles;
- (e) vocalizes and looks;
- (f) vocalizes, looks, smiles;
- (g) vocalizes and smiles;
- (h) cries;
- (i) cries and looks;
- (j) averts from mother;
- (k) no signalling behaviour.

For each videotape, each of the above maternal behaviours was encoded every time it occurred along with any response by the infant

(as defined by the above infant behaviour categories). Similarly, every occurrence of each of the infant behaviours was encoded, along with any response by the mother (again as defined above in the maternal behaviour categories). In the case of both infant and mother, a behaviour was defined as a new occurrence of that behaviour if 3 seconds or more elapsed before its reoccurrence, and similarly, a response by either infant or mother was thus encoded if it occurred within 3 seconds of the partner's preceding coded behaviour. In addition, for each videotape, the number of turns per interaction were also noted; thus, for example, if mother vocalized, infant vocalized and mother vocalized, 3 "turns" were coded as having occurred. Any of the above mother or infant behaviour categories could constitute a turn, (indeed, it was observed, as did Whiten (1977) that during interaction sequences with these very young infants, mothers tended to treat even the simplest of these infant behaviours as the infant's "turn" at interacting).

An interaction episode was said to have ended if a period of 3 seconds of "signalling silence" elapsed, 3 seconds being the minimum length of time that Stern (1977) states characterises a "time out episode" between interaction sequences, hence also its use as a time limit by which to define "response", as described above.

Inter-observer Reliability

A videotape was selected at random and one 10-minute section was edited out, divided into 10 x one minute sections with the aid of an electronic "bleeper". These 10 x one minute sections were then analysed, using the above categories, by an independent observer and then by the Experimenter. Percentage agreements were

calculated for each Infant Category x Mother's Response, and for each Mother Category x Infant Response. For the Infant Categories, percentage agreements ranged from 85% to 100%, with a mean of 93.1%. For the Mother Categories, percentage agreements again ranged from 85% to 100% with a mean of 91.6%.

Results

The lengths of all the videotapes were noted and the behaviours subsequently expressed as frequencies per hour. Furthermore, it was found that certain behaviours occurred at very low frequencies, thus necessitating that for the purposes of analyses, several categories be combined. Maternal behaviours were combined as follows:

Category 1: "Distal"

vocalizes to infant
shifts gaze to (looks at) infant

Category 2: "Distal Combined"

looks and smiles
vocalizes and looks
vocalizes, looks and smiles

Category 3: "Tactile"

vocalizes and tactile play
looks, smiles and tactile play
vocalizes, looks smiles and tactile play

Category 4: "Nothing"

averts from infant
no behaviour to infant

The combination of behavioural categories is, like the original process of categorising behaviour itself, a somewhat

arbitrary and intuitive one. In this case, the combinations of categories were based on the Experimenter's perceptions of the complexity of the behaviours and her intuitions as to the extent that they intruded on the infant's world and made communicative demands of her/him. Thus "averts from infant" and "no behaviour to infant" both make no communicative demands on the baby nor do they intrude on her/his world. Because of this similarity, they are both grouped together in one overall category (Category 4).

Category 3 includes all the behaviours which embody some tactile component, as tactile behaviours are considered to introduce a very intrusive and demanding factor to the communicative exchange. "Looks and smiles", "vocalizes and looks" and "vocalizes, looks and smiles" are all considered similar in that they make multi-faceted communicative demands upon the infant, but without the intrusiveness of the tactile behaviours. Hence they are all grouped together (Category 2), whilst the two remaining categories "vocalizes to infant" and "shifts gaze to (looks at) infant" are both single faceted, simple, non-intrusive and the least demanding of all the maternal behaviours coded and in this similarity, they are grouped together to form Category 1.

Likewise, the infant behaviour categories were also combined to form four overall categories, as follows:

Category 1: "Distal"

vocalizes
shifts gaze to (looks at) mother

Category 2: "Distal Combined"

looks, smiles
vocalizes, looks
vocalizes, looks, smiles
vocalize, smile
smile

Category 3: "Crying"

cries
cries, looks

Category 4: "Nothing"

averts from mother
no signalling behaviour

The rationale for these combinations of behaviour categories is very similar to that used for the maternal behaviour categories, as explained above. Specifically, Category 4 is again comprised of those behaviours which appear to make no demands on the mother nor to intrude upon her communicative world. Category 3 includes those behaviours which include crying, that is "cries" and "cries, looks", as it was felt that crying was a specifically demanding and intrusive aspect of infant communicative behaviour. The behaviours grouped in Category 2 are all considered similar in that they make multi-faceted communicative demands upon mothers, without including the specific intrusiveness of the crying categories. The exception to this is the inclusion in Category 2 of the behaviour "smile", which is not multi-faceted in the same way as is, say, "vocalizes, looks, smiles". Nevertheless, this behaviour was included as it seemed to be as communicatively demanding as the multi-faceted behaviours in this Category, and far more demanding than the other single-faceted behaviours grouped together in Category 1 (that is "vocalizes" and "shifts gaze to (looks at) mother"). Indeed, only 12 per cent of all the infants' "smiles" were not responded to by the mothers, whereas 36 per cent of the Category 1 behaviours "look" and "vocalize" were similarly ignored. The other behaviours in infant Category 2 evoked similarly high levels of communicative responsiveness from the mothers as did the infants' "smile".

The behaviours thus coded and categorised were then analysed using an analysis of variance firstly for the infants' behaviours (DS/NC groups x age at visit x categories x mothers' responses) and similarly for mothers' behaviours (DS/NC groups x age at visit x categories x infants' responses). The ANOVA for infants' behaviours revealed the following significant effects and interactions: a main effect of Infant Behaviour Categories ($F = 17.77$, with 3 and 30 d.f., $p < 0.001$), a main effect of Mothers' Responses ($F = 57.83$, with 3 and 30 d.f., $p < 0.001$), an Infant Behaviour Categories x Mothers' Responses interaction, ($F = 15.19$, with 9 and 90 d.f., $p < 0.001$) and an Age at Visit x Infant Behaviour Categories x Mothers' Responses interaction ($F = 1.62$, with 27 and 270 d.f., $p < 0.05$). Whilst these results demonstrate that both infants' and mothers' use some behaviours significantly more than others, and that these interaction patterns change significantly as the infants get older, the lack of any significant main effect of the Groups (DS/NC) or significant interactions indicating differential effects of these two Groups, means that the above significant results do not have bearing for the hypotheses under investigation here. (See Table 6.4(a)).

Likewise, the ANOVA for mothers' behaviours revealed the following significant main effects and interactions: a main effect of Age at Visit, ($F = 4.85$ with 3 and 30 d.f., $p < 0.01$, a main effect of Maternal Behaviour Categories ($F = 86.46$ with 3 and 30 d.f., $p < 0.001$), a main effect of Infants' Responses ($f = 55.99$, with 3 and 30 d.f., $p < 0.001$), a Maternal Behaviour Categories x Infants' Responses interaction, ($F = 38.02$ with 9 and 90 d.f., $p < 0.001$) and an Age at Visit x Maternal Behaviour Categories x

Infants' Responses interaction, ($F = 2.14$ with 27 and 270 d.f., $p < 0.01$). No other significant main effect or interactions were found. (See Table 6.4(b)).

As in the Infants' ANOVA, there is once again evidence that all mothers and their infants use some behaviours and responses more than others, and that these patterns change significantly with the increasing maturity of the child. However, there is no differential effect of Groups, and thus these significant results again do not relate to the hypothesis being addressed.

For each mother-child dyad, the mean number of turns per sequence was calculated for each recorded visit, and the two groups (DS and NC) were compared using an analysis of variance, (Groups x Age at Visit). This ANOVA revealed no significant main effects or interactions, (see Table 6.5).

TABLE 6.4

Table to show mean frequencies for the 4 overall behaviour categories, as shown by infants and mothers in both groups, across all visits.

(a) Infants

	Distal (Cat. 1)*	Distal Combined (Cat. 2)	Crying (Cat. 3)	Nothing (Cat. 4)
DS Group	17.3	5.1	6.0	14.5
NC Group	12.9	7.6	3.7	11.1

(b) Mothers

	Distal (Cat. 1)*	Distal Combined (Cat. 2)	Tactile (Cat. 3)	Nothing (Cat. 4)
DS Group	10.4	39.4	5.5	7.3
NC Group	8.0	42.1	5.4	10.2

* N.B.: For full definitions of the behavioural categories, see above.

Table 6.5 to show: mean lengths of interactions (in turns) for both groups at each visit.

	Visit 1	Visit 2	Visit 3	Visit 4
DS Group	3.0	3.2	3.5	3.3
NC Group	3.0	4.3	4.0	3.4

Discussion

The data presented here thus show no significant differences between the DS infants and their matched nonhandicapped peers, nor indeed between the mothers of these 2 groups of children, insofar as communicative behaviours are concerned. Such a finding, particularly insofar as the infants are concerned, is in conflict with much of the literature in this area. As noted in the first chapter, much of this research paints a picture of the DS infant as a less responsive and less communicative baby, with delayed and qualitatively different early signalling behaviours, such as eye contact (Berger and Cunningham, 1980; Jones, 1980; Spitzer-Griffith, 1975) vocalization and smiling, (Berger and Cunningham, 1981;

Buckhalt et al, 1978; Cicchetti and Sroufe, 1974), crying, (Freudenberg et al, 1978; Fisichelli et al, 1966) and an overall lower level of facial communicative intensity (Sorce and Emde, 1982),

Research literature also points to differences in the communicative behaviours of mothers of DS infants when compared with mothers of nonhandicapped babies. As noted in Chapter One, this research suggests that mothers of DS infants are more stimulating of their infants and also less discriminating in the infant behaviours which they interpret as solicitous of stimulation, (Sorce and Emde, 1982; Jones, 1980; Berger and Cunningham, 1981, 1983). The possibility is also discussed in the above review (Chapter One) that this is a current phenomenon, that is to say that the observed pattern of increased maternal stimulation is in fact fostered by intervention programmes and is thus not so apparent in studies conducted less recently when such programmes were less common (e.g. Carr, 1975).

The present study is in conflict with both of these patterns of DS-"normal" differences. Insofar as possible explanations for this are concerned, methodological constraints must firstly be considered. It is possible, for example, that the videotapes made were not long enough to enable any differences to become apparent. In general, recordings were made either until the infant fell asleep, or until the mother indicated that she no longer wished to continue. Thus videotapes were seldom much over half an hour in length, and indeed, the mean tape lengths were 25 minutes for the DS group and 27 minutes for the NC group. Nevertheless, insofar as the infants are concerned, the weight of evidence as to their early

communicative deficiencies suggests that this should be sufficient time in which any differences could manifest themselves. Moreover, it might be hypothesised that insofar as the documented differences in maternal stimulation are concerned these effects are even more likely to show in front of "The Psychologist" when to some extent, despite attempts to negate such fears, mothers might feel that they are being evaluated as "mothers of handicapped children". Such an effect, it might be further argued, would not be affected by the overall length of the videotape recordings.

However, one effect of these relatively short recording times is that certain behaviour categories were not found to occur during recording sessions, thus necessitating that behaviours be combined to give the overall categories, as noted above. It is possible, therefore, that any effect of either DS infant retardation or maternal extra stimulation manifest perhaps in one specific area was not detected due to that behaviour's inclusion in the more wider, overall Categories. The occurrence of such an effect could thus only be determined by the making of much longer recordings, with the consequent generation of a wider sample of behaviours, thus negating the need to combine behaviours and responses for the purposes of analysis.

It must also be considered that the mothers and their DS infants in this present study do not behave in a way that is dissimilar from the control group due to their intrinsic similarities, rather than due to or indeed, despite any of the methodological explanations discussed above. That is to say, that over the first 6 months of life, the present sample of DS babies are behaving in a way that is not outwith the "normal" range of

behaviour, and their mothers are likewise showing "normal" communicative behaviours and responses.

The extent of this similarity was assessed by ranking the overall group mean frequency of each infant behaviour category and its possible maternal response category (i.e. 16 subcategories in all) for the DS group and likewise for the NC group, and correlating the 2 sets of ranks, (i.e. a Spearman correlation). Similarly, a Spearman correlation was conducted between the ranked group mean frequencies for the 16 DS subcategories of maternal behaviour category x infant response category and these same group mean frequencies in the NC group. For the infants, a correlation of $r_s = 0.91$ was found and for the mothers, that of $r_s = 0.75$. Both correlations are highly significant, ($p < 0.01$). Thus more than being nonsignificantly different, these 2 groups are significantly similar in their interaction patterns. Such a finding has immense implications for intervention programmes. If, as it seems, mothers and their DS infants are behaving as "normal", and yet, in all probability, problems in these infants' development will still manifest themselves later, then it must be considered that what appears to be an appropriate, and by "normal" standards, an adequate environment for development, may not be so for the DS child, and thus intervention will have to gear itself towards providing an environment that is "more than adequate" (as also discussed in Chapter Four).

Again, however several factors could be responsible for this finding of DS-"normal" similarities. As stated in the above "Note" to the introduction of this chapter, not all DS infants born in the region were referred to the study and in fact, the Experimenter was

informed of perhaps less than 50 per cent of local DS infants born within the study period. It seems probably therefore that paediatricians concerned were specifically selective in those infants and mothers they considered suitable for referral, and thus the present sample may be biased towards more healthy infants and/or more accepting, positive parents. Furthermore, it could also be that as time progresses, so the intervention programmes for handicapped infants become more appropriate and more efficient, such that differences between nonhandicapped and handicapped children are minimised. The somewhat idiosyncratic nature of these programmes as applied by the various local authorities makes any form of evaluation or comparison between them impossible, a problem exacerbated by the small sample size used in this study, but nevertheless, such a possibility cannot be ignored, particularly in the light of the slightly better BSID scores reported for this sample (see above), as compared with other recent studies.

However, if the behaviour categories mean scores are examined (see Table 6.4(a) and (b)), it will be observed that albeit at a statistically nonsignificant level, differences do exist between both DS and NC infants and their mothers, and that some of the differences are in the direction that might be predicted from work in this area conducted on larger sample sizes. It will be noted, for example, that whilst overall, the DS infants show more of the simple Distal categories of behaviour than do the NC infants, this latter group show more of the more complex Distal Combined behaviours than do their DS peers. This pattern is reflected in the 2 groups of mothers, with the NC mothers showing more Distal Combined but fewer Distal behaviours than the DS group mothers.

There is thus a suggestion that even at this early age, the nonhandicapped dyads are showing interaction patterns that are more complex than those exhibited by the DS dyads. Moreover, whilst insofar as the infants are concerned, the DS babies show "no behaviour" (Category 4) slightly more often than do the nonhandicapped infants, this difference is reversed in their mothers, such that the NC mothers show "no behaviour" less than the DS group of mothers. Again, this is consistent with the type of findings reported by several researchers (e.g. Berger and Cunningham, 1983) of mothers of DS infants being more directive in their interactions and with their behaviour being less contingent upon their infants' initiations of interaction. Despite this being a fairly small difference between the groups, it is perhaps worth noting that whilst all mothers showed high levels of interactive behaviour that did not seem to be child elicited, the DS group of mothers responded to 82% of their infants' "no behaviour" with some type of communicative act, whereas this percentage was lower in the NC group, at 76%. The DS babies also cried slightly more than the NC infants, in keeping perhaps with findings in the literature of DS infants having more "difficullt" temperaments than normal" infants (e.g. Bridges and Cicchetti, 1982). Whilst it must again be emphasised that all these differences are very small and statistically nonsignificant, that they exist in the direction suggested by previous research conducted in this area perhaps lends weight to the consideration of the small and highly selective sample used here when drawing conclusions from this data.

A further possibility in explaining the lack of significant differences found, particularly insofar as explanations of the

similarities in behaviour of the 2 groups of mothers are concerned, is that the attitudes of the mothers with DS children are changing, be this over time or through the effect of intervention programmes and parent support groups. Other studies (for example, Jones, 1980) have observed that mothers of DS infants tend to expect less of their infants than do mothers of nonhandicapped babies, and moreover, that they tend to view interaction as teaching, whilst mothers of "normal" infants viewed this activity in a more relaxed way, as enjoyment or playing. Such a view of interaction could quite plausibly lead to mothers being more stimulating of their DS infants, in an effort to maximise the amount they are "teaching". Conversely, the absence of such an attitude may well negate the tendency to extra stimulation. The following study thus presents an investigation of the attitude to and perceptions of DS-labelled infants, as shown by the mothers in this sample.

6.5 Mothers' Attitudes to DS Infants

As with the experiment reported in Chapter Two, the aim of this experiment is to investigate mothers' attitudes to and perceptions of DS children, irrespective of the actual behaviour of these children. Thus a "normal" infant labelled as DS, was used for this experiment, the rationale being that if there is a peculiarity of behaviour associated with the DS condition, which alters or affects maternal attitudes, then a "normal" child, labelled as DS could not possibly show it. A comparison of mothers' attitudes to a specific child labelled as DS with those of mothers who see the child without the label applied should thus give some indication of the effect of the label per se.

Method

As will be apparent, the video apparatus, questionnaire, and pre-recorded video are as reported in Chapter Two, as is the method of assignment of the label "DS" to the appropriate infant. The procedure too is essentially similar to that reported in this earlier chapter.

Materials

(a) Video Recording

Three video recordings were constructed, using the above equipment, of 3 "normal" mother-infant dyads at play in their own homes. One of these videos, for reasons which will be discussed below, became irrelevant, and thus this experiment will refer to and discuss only 2. Both infants were within 10 days of their 6 month birthday and were from similar socioeconomic backgrounds and were dressed similarly. In both cases, when making the recordings, the camera was kept focused on the infants, involving the mother in the recording only peripherally. To make up the experimental video film, a 5 minute section of each video was edited, which, in both cases, involved the infant playing first with a selection of her own toys and then with toys provided by the Experimenter (a large rattle and a set of multi-coloured stacking cups).

(b) Questionnaire

A questionnaire was designed to measure attitudes to and opinions of the children on the experimental video film. This consisted of ten 7-point rating scales, measuring judgements of the child's (i) attentiveness, (ii) vocal ability, (iii) sociability, (iv) manipulative skills, (v) understanding of mother, (vi) physical

development, (vii) happiness, (viii) interest in mother, (ix) physical attractiveness, and (x) future general development. (These 10 scales were chosen as a result of first, asking independent subjects to describe the behaviours of the children on the films and by asking them what they regarded as important infant behaviours, and secondly by reference to the relevant literature.

Pilot Study/Assignment of "Labels"

(i) Assessment of Infants

Both the infants involved on the video were assessed using the Bayely Scales of Infant Development (BSID). Infant 1 was found to have a BSID Mental Development Index of 130, and Infant 2, one of 121.

(ii) Pilot Subjects

Nine women, 7 of whom had children, the remaining 2 having had considerable experience with young children through their extended families.

(iii) Method

Each pilot subject viewed the video, and at the end of each of the 5 minute mother-infant sessions, she completed the questionnaire. (Four subjects saw Infant 1 first and 5 Infant 2 first).

(iv) Results

The subjects' mean ratings for each child was calculated, and a t-test revealed that the children had not been judged to be significantly different, although there was a (non-significant) trend to perceive Infant 1 (whose BSID score was the higher of the two), as more able.

(v) Assignment of "Labels"

For the purposes of this experiment, Infant 1 (whose BSID score was the higher of the 2 and who had been judged by the pilot subjects to be the slightly more able infant) was given the label "Down's Syndrome", and Infant 2 was described as "normal".

Ideally, of course, if attitudes to the 2 children are to be compared in order to ascertain the effects of the label DS, then it would be preferable to compare them to the same child, once when labelled and once when not labelled. However, such a manipulation would evidentially fail as subjects would recognise the infant and so disbelieve the label. It was therefore decided to use 2 similar children and to weight the experiment in favour of perceiving the DS-labelled child as brighter. That is, by choosing the child with the higher BSID and who was perceived as brighter by the pilot subjects, to be the DS labelled child, it could not be argued then that this child was perceived as more like a DS child simply because of her lower competence.

Subjects

Three groups of subjects were involved. The first 2, Group 1 and Group 2, consisted of the mothers of the DS and NC infants respectively, as reported earlier in this chapter. Group 3 consisted of 7 mothers of nonhandicapped infants, all of whom were aged less than 6 months.

As noted above, for mothers in Groups 1 and 2, this experiment was conducted at the third visit in the longitudinal study, when their infants were aged four and a half months. The mothers in Group 3 volunteered specifically for this one experiment and were

not participants in the longitudinal research.

(It should be noted that this study involved 7 subjects per group, rather than 6, as in the earlier studies reported above. This is because the original sample of DS infants consisted of 7 infants, but as the seventh child was hospitalised shortly after this third visit, and thus did not complete the study, data from him (and his matched NC infant) have not been included in either the videotape analysis or the BSID, as reported above. Data from his mother's participation in this experiment will, however, be included in the results reported here).

Procedure

The video was shown to all subjects in all 3 hree groups, and in all cases, the video was shown to subjects in their own homes.

Groups 1 and 2

Groups 1 and 2 were told the following before the video was shown:

"I am going to show you 2 films, each of an infant and mother playing together. Both infants are 6 months old. At the end of the first film (which lasts 5 minutes), I would like you to fill out the first half of the questionnaire, headed 'First Child'. You will then see the film of the second mother-child pair, which again, lasts 5 minutes. At the end of that I would like you to fill out the second part of the questionnaire, which involves identical questions to the first, but is headed 'Second Child'.

"The first child you will see has DS (mongolism)

OR*

"The first child you will see is a perfectly normal, healthy child with no physical or mental handicaps."

"The second child has DS (mongolism)

OR*

"The second child is a perfectly normal, healthy child with no physical or mental handicaps."

(* Depending on order of presentation).

As stated earlier, the child described as having DS was always Infant 1, but the order of presentation of the 2 video sections was reversed for approximately half the subjects in each group. For both these groups, the diagnostic/intellectual labels were repeated directly before they saw each video section.

Group 3

To control for any comparison demand characteristics intrinsic to the methodology used for Groups 1 and 2, Group 3 subjects were told the following before they saw the video and completed the questionnaires:

"I am interested in the differences which exist between infants even at an early age. I am going to show you 2 films, each of a 6 month old infant playing with her mother. Although both the infants are normal, healthy 6 month olds, there are obviously differences between them, and it is your judgements of these differences that I would like to examine.

"At the end of the first film, (which lasts 5 minutes), I would like you to complete the first part of the questionnaire, headed 'First Child', and at the end of the second film, to complete the second part of the questionnaire, headed 'Second Child'. The questions in both parts of the questionnaire are identical."

Results

The questionnaire data for the three groups of mothers were collated. For each mother in all three groups, the rating given to the second child (or "normal" child in Groups 1 and 2) was subtracted from that given to the first (or "DS") child, for all 10

rating scales. These "labelling effect" data were then compared using an analysis of variance (Groups of Mothers x Ratings). This ANOVA (see Table 6.7 below) revealed no relevant significant main effects or interactions. (The main effect of Ratings was significant but this is not of relevance to the hypotheses under investigation here).

Discussion

These results thus suggest that, in marked contrast to the mothers of preschool children, the mothers of infants, both DS and nonhandicapped, show no significant labelling effect in their ratings of "DS"-labelled versus "normal" labelled infants. Several factors could be responsible for this result. It could be that the experimental manipulation failed with these groups of mothers: that is, the labelling was simply not credible when conducted with mothers of infants only six weeks younger than those on the videos. Thus the mothers in this present study ignored the labels and merely compared the infants to their own child. This explanation seems unlikely however in view of the fact that although when the Experimenter de-briefed the mothers as to the true nature of the videotaped infants, some mothers mentioned that they thought they had judged the infants similarly, no mother said that she had disbelieved the labelling. Nevertheless, the possibility of any labelling effect being weakened by the presence of the mothers own young infants cannot be dismissed. It may be that mothers are affected by the label "DS" but this effect is then mitigated by their awareness of their own infant's behaviour. If this is the case, then it perhaps explains the larger labelling effect (see

TABLE 6.7: Groups of Mothers Mean Rating Differences for the Ten Rating Scales

	Rating Difference		
	Group 1	Group 2	Group 3
Attentiveness	0	-0.43	0.86
Verbal Ability	-1.57	-2.71	-0.86
Sociability	-0.71	-0.86	0.43
Manipulative Skills	-0.29	0.14	1.29
Understanding	0	-0.14	0.57
Physical Development	0.27	0	1.00
Happiness	-0.43	-0.29	0.29
Interest in Mother	-0.57	-0.29	0.14
Physical Attractiveness	0.57	0.14	0.43
Future Development	-1.0	-0.86	0.29
Mean Ratings	-0.37	-0.53	0.44

Table 6.7) shown by the mothers of the "normal" infants than that shown by the mothers of the DS infants (notwithstanding the fact that both effects are statistically nonsignificant). For the mothers of the DS infants, a comparison of the behaviour of the labelled DS infant with their own "real" DS infants will reveal a greater difference than that which the mothers of the "normal" infants will experience if they are comparing their own infant with the DS-labelled infant (given that as discussed above, all the DS infants are delayed). Rather than disparaging their own infants, the mothers of the DS infants may therefore positively modify their judgements of the "DS" labelled infant (e.g. "she must be very high grade"), hence reducing any labelling effect they do show in comparison with the mothers of nonhandicapped infants.

It is notable, however, that although at a statistically nonsignificant level, the experimental labelling has exerted some effect on both Groups 1 and 2, in comparison with the no-labels condition of Group 3. As Table 6.7 illustrates, whilst Group 3 show an overall positive mean rating difference - that is they judge Infant 2 (the normal-labelled infant) less positively than Infant 1 (the DS-labelled infant) - Groups 1 and 2 show the reverse effect, with the second, normal-labelled infant being judged slightly more positively than the first, DS-labelled infant.

Nevertheless, as stated, this effect is not of a significant magnitude, and indeed, such a nonsignificant finding is not in conflict with much of the literature in this area. Gunn, Berry and Andrews (1981), for example, showed that mothers' perceptions of their DS infants, as reported in interviews, were of their babies being more "normal" than mothers' temperament ratings of these

infants would suggest. Likewise, a similar study by Bridges and Cicchetti (1982) also indicated that even when, on the basis of mothers' questionnaire responses, their DS infants could be classified as "difficult" babies, no mother actually perceived her own child in this way. Some researchers do discuss parental negative attitudes to DS infants at around this 4 month stage (e.g. Emde, Katz and Thorpe, 1978), but overall this early period seems to be categorized as a "happy, hopeful" one, as Cunningham and Sloper (1977) describe:

"By the third to fourth month the impact of the handicap has usually been overcome. The baby has been accepted as an individual. The next stage that appears is when mothers spontaneously begin to comment, and often to insist, that they cannot see any difference between their baby and their other children or relatives' children, as they remember them, "in fact she seems quite normal", "He is as quick as my other one was." Some mothers (and fathers) seem confused by this. They have accepted that the child is handicapped and are looking for signs of confirmation, yet they only see a "normal" baby. Others use these observations to generate hopes that perhaps the baby is not so damaged after all - "perhaps the baby is 'high grade'"."

(Cunningham and Sloper, 1977)

Against this background, reference to the informal diary kept for each infant can perhaps help to clarify the attitudes of the mothers of DS infants in this study.

6.6 Diary Study

Method

After each visit to both the DS and the NC infants, within one hour of each visit's end, the Experimenter noted down any comments made by the mother on the nature of her relationship with her DS infant, her feelings towards the child, expectations for the future, etc.

Results and Discussions

Given the above methodology, it must firstly be emphasised that any evidence from these diaries is highly subjective and limited by the biases of the Experimenter's memory.

Nevertheless bearing such considerations in mind, it is interesting to note that many of the diary records of the visits made at 4 and a half months to the DS infants lend support to the notion of a "happy, hopeful" period, in maternal attitudes, as described by Cunningham and Sloper (1977), and as demonstrated in the above ratings study.

At this visit, for example, 5 of the mothers began to speak positively of their infants to the Experimenter for the first time, discussing means of enhancing DS children's development. These parents also tended to mention for the first time that they were joining local branches of parents self-help groups, such as the Scottish Down's Syndrome Association. Of more interest, however, is the observation noted at this visit in over half the sample, of mothers remarking that they perceived little or no difference between their DS baby and either their other children at the same age or other infants they knew. As stated above, Cunningham and Sloper note such comments being made by the mothers in their sample from about the infants' 3-4 month birthdays and onwards.

Indeed, of the 7 mothers whom the Experimenter visited on this third occasion, only 2 did not make comments of this positive, "no differences observed" type. One was a mother whose baby had severe congenital heart disease, (CHD) thus necessitating a life-saving operation which was in itself, potentially fatal, (although the infant did survive it), and the other mother also had an infant with

CHD, but in this case, no operation could be performed, and the mother was informed that the child would probably not survive his first year. In both these cases it was the Experimenter's impression that neither mother had time or inclination to consider the long term implications of DS in the face of the far more immediately hazardous and life threatening diagnosis of CHD.

Overall, however, whilst all the first visit diaries to the mothers of the DS infants record observations of the upset and family trauma which accompany the diagnosis and early weeks of life with a DS baby, the majority of mothers seem, by the third visit, to have entered a "happy, hopeful" stage in their attitude to and relationship with their infant. Such a change only seems to be negated when the DS condition is accompanied by CHD, which poses a greater immediate threat to the child's life, (rather than merely to the quality of the child's life, as is the case for DS alone). This is not to suggest that mothers' "happy, hopeful" period involves their complete denial of their children's handicap. Although mothers asserted here, as did mothers in Cunningham and Sloper's (1977) sample, that they could see little difference between their DS infant and previous infants at the same age, it could be argued that it is mothers' very acknowledgement - however unspoken - of their children's real handicap that enables and motivates them to work with their infants on intervention programme tasks, particularly as these tasks often require mothers to maintain a weekly or monthly record of their infants' delays compared with "normal" development, thus enabling the accurate selection of intervention goals. In some senses, therefore, mothers may be said to have a very real conception of their child's handicap, and the

reality of this is that the DS infants in this sample are still functioning within the range of "normal" development, and they are also interacting in a seemingly "normal" way, and thus the mothers in this study perhaps have every reason to be both happy and hopeful.

6.7 General Discussion

To summarise the overall content of this longitudinal study, it does appear that insofar as the infants are concerned, whilst the DS infants are functioning at a lower level than the control infants (as assessed by the BSID), their behaviour still falls within the "normal" range and indeed, in several cases is average, or even above average, in standard. Moreover, when their communicative behaviours are compared with those of the NC infants, no significant differences are found between the 2 groups. Overall, therefore, the DS infants in this sample do not present a picture of grossly distorted or delayed development, and whilst their somewhat lower BSID scores may well be prognostic of later developmental problems, this cannot be said of the communicative behaviours observed here.

Similarly, there is no indication in the observations made of the communicative behaviours of the mothers of the DS infants of the often later found idiosyncracies in interactive behaviour. These mothers showed communicative behaviours that were in no way different from those of the control group mothers, neither in their levels of directiveness nor responsiveness.

Moreover, mothers of these very young DS infants do not seem to show any more than a very slight and nonsignificant trend to rate DS-labelled infants more negatively than so-called "normal" infants.

However, it is hypothesised that as the DS children develop and thus perhaps begin to violate more obviously notions of "normal" progress, appearance and behaviour, such negative expectancies, however small at this early stage, may be partly confirmed and perceptions of DS children may become disproportionately negative thus eventually leading to distortions in behaviour; such behavioural distortions thus being in part elicited by the DS child her/himself, and in part generated by stereotypic beliefs. Indeed, the precipitating factor in this chain of events may simply be the more obviously DS facial characteristics which are often more prominent in the preschooler than in the DS infant; (research conducted with nonhandicapped infants and children indicates the differential behaviour adults manifest towards children on the basis of merely whether they perceive them as physically attractive or not (e.g. Berkowitz and Frodi, 1979; Dron, 1972, 1972; Stephan and Langlois, 1984; etc.)).

Whatever the case, it is suggested on the basis of the present study, notwithstanding the methodological considerations of the small and select sample used, that it is to the latter half of the first year and the beginnings of the preschool period that research must be directed in order to ascertain the roots of both the child's increasing decline and distortion of developmental progress and the mother's increasingly specific negative attitudes and distorted perceptions, with the consequent effect on behaviour of both mother and child within their communicative relationship.

CHAPTER SEVEN

GENERAL DISCUSSION AND CONCLUSIONS

7.1 Introduction

Reference to the discussion sections at the close of each chapter illustrates, with various considerations, the conclusions that may be drawn from these various studies. Whilst it is not proposed to repeat such arguments here, it is intended instead to discuss in the order of the presentation of these studies, the overall conclusions that can be drawn, in the context of the chronological development of the child with DS.

7.2 Early Infancy

In attempting to trace the differential and perhaps "abnormal" contributions made by mother and DS child during the preschool period it seems almost a truism to point out that both partners contribute particular difficulties to the relationship from the day of birth onwards. Whilst not documented in this study, aside from any inherent retardation, DS neonates are often visibly different from nonhandicapped newborn infants (e.g. Cunningham, 1983) showing physical signs which not only enable a clinical diagnosis to be made before chromosome confirmation (e.g. muscle hypotonia, characteristic facial appearance, etc.) but which are also evident in many cases to their mothers, such that they often are at least aware before the diagnosis is made, that there is "something wrong", if not, more precisely, that the baby is "a mongol", (Hannam, 1975). In addition to such early differences in the mother-neonate dyad from that "normally" found, the formal diagnosis of the baby is almost inevitably upsetting to even those mothers who realised that all was not well with the child from the outset. Although this early distress and trauma was only briefly studied in the diary

study entries at 6 weeks (see Chapter Six), the traumatic nature of even the few sympathetically imparted diagnoses, not to mention those parents told in a more clumsy manner, has been well documented (see, for example, Murdoch, 1983; Cunningham and Sloper, 1977; Hannam, 1975; etc.). In short, the combination of parental trauma, mother-infant separation (Murdoch, 1983) and inherent infant weaknesses, "abnormal" physical appearance and often concomitant problems such as CHD means that from the outset, the mother-infant relationship is potentially far more fraught with difficulties than might "normally" be found and moreover, from the outset, the roots of these problems and complexities can be seen to exist in potential at least, in both members of the dyad.

Moreover, as discussed in Chapter Six, early infant assessments reveal that even if helped by intervention, DS infants at the least can be described as developing more slowly than their nonhandicapped peers, a phenomenon exhibited even by the possibly "select" DS infants studied in the present investigation, all of whom were part of intensive intervention programmes. Such "therapy" may indeed be responsible for the overall improvement in recent years of early DS development, but although the majority of the assessments conducted on infants in the present study yielded scores within the "normal" range, these scores were still significantly lower than those obtained for matched nonhandicapped infants. This "normality", albeit delayed, is however reflected in the present sample of DS infants' communicative behaviours which even more strikingly than the results of the BSID assessments, do not differ significantly from those exhibited by the "normal" infants. Nevertheless, it cannot be ignored that the 2 groups of babies do

show some differences in communicative behaviours which, whilst not reaching statistical significance, do suggest that the DS infants' behaviour is slightly less complex than is that of their nonhandicapped peers (see Chapter Six) and perhaps, in that sense, is slightly less mature at each stage during the 6 months of the longitudinal investigation. Overall, therefore, this study suggests an image of the DS infant as a delayed baby; whilst the investigations reported here do not suggest any particular differences in development (the latter being defined, as discussed in Chapter Four, as "abnormal" or unusual asynchronies in development), given much of the research in this area into other, arguably more subtle aspects of infant communicative behaviours (such as gaze duration, intensity of facial expression, etc., as reviewed in Chapters One and Six), and the findings that such behaviours may show "differences" as well as delays, when compared to those exhibited by "normal" infants, the possibility cannot be ignored that even over the first 6 months of life DS infants may manifest more than simply a delay in developmental progress.

Nevertheless, results from the present investigations with DS infants give no indication of any such asynchrony and indeed, as reported in Chapter Six, mothers claim to see little difference between their DS infants and other babies of similar ages. Insofar as mothers of DS infants are concerned, within this early infancy period, the literature suggests that notwithstanding the initial shock and upset of the diagnosis, after approximately 4 months of their babies' lives, mothers show an almost unrealistically positive and hopeful attitude to their infants, seeing little but "the best" in their babies. Mothers in this present study likewise seemed to

have entered a "happy, hopeful" period by approximately 4 months of their babies' age and arguably, this is reflected in their lack of any significant labelling effects/negative expectancies, as indicated by the ratings study (Chapter Six). This is not to suggest, however, that these mothers lacked any conception of their children's handicap: despite all protestations of "normality" or "near normality", all the mothers worked hard with their infants on the very "abnormal" or at least unspontaneous activities of intervention programmes. Moreover, as both Bicknell (1980) and Newson (1983) discuss, the diagnosis of DS is a traumatic shock largely because of the associations, both stereotypic and real, of notions of "abnormality" that it carries, and the manifestations of this, even within this "happy, hopeful" period are perhaps best illustrated by the fact that by this time, most of the mothers had joined self-help organisations for DS children and their families - a step which marks an acknowledgement of their children's "abnormality" and perhaps also their redefinition of themselves as "handicapped families", with their consequent desire to associate with other such "handicapped families".

Nevertheless, as discussed above, throughout this first 6 month period, the DS infants in this present study give little confirmation to any "notions of abnormality" that might be associated with their genetic condition. It is thus perhaps not surprising that unlike in the preschool study, mothers of these young infants show only a slight but nonsignificant labelling effect. However, the fact that these mothers still show an overall (albeit nonsignificant) negative tendency towards the DS-labelled child which, like that of the mothers of the nonhandicapped infants,

is in the opposite direction to that of the control group (see Chapter Six) and that this is manifest even despite the possible select and "normal" nature of this DS sample suggests that mothers may harbour some negative stereotype of DS children across this period.

However, not only does any such hypothesised negative stereotype have little or no effect on these mothers' ratings of a DS-labelled child, but it also appears to similarly have little effect on their interactive behaviours with their infants, apart from an insignificant trend for them to show fewer complex behaviours and to be somewhat more directive than the matched mothers of nonhandicapped infants (see Chapter Six). It must be again noted that the infants too were showing slightly fewer complex interactive behaviours, and mothers may thus simply be responding to this. However, their slight tendency to interact with their infants more than "normal" mothers in response to no initiation from the infants themselves may be in response to their perceptions, even at this early stage, of their infants as needing more control. Conversely, however, as the infants showed "no behaviour" slightly more than their nonhandicapped peers, this perhaps again is simply indicative of mothers responding to their children's real deficit.

Whichever the case, given the aforementioned insignificance of these behavioural differences, it is clear that throughout this first six month period, the mother-infant interactive relationship is remarkably "normal" in appearance. Nevertheless, it may equally be claimed that in both mother and child there is some indication of difficulties that may be found later. The DS child is undoubtedly delayed in development, although not sufficiently to activate

maternal negative expectations and notions of "abnormality". However, these negative expectations are not entirely dispelled but appear to be "dormant" at this stage, or at least having little effect on ratings or behaviour. The possibility exists, therefore, that if and when the child provides any confirmation of her "abnormality", however slight this may be, this may have a (possibly disproportionately) significant effect on mothers, activating these negative expectancies in a way that would result in behavioural as well as attitudinal effects.

7.3 Late Infancy

As discussed in Chapter Six, whilst it was originally proposed to conduct a study bridging the late infancy-early preschool gap, this was subsequently not possible and thus it can only be hypothesised that either the child's increasingly apparent retardation and/or "mongol" physical appearance acts to elicit behavioural and attitudinal differences in the mother. Certainly, by the preschool period, the evidence presented here suggests that the child's retardation has become more marked and has brought with it specific deficiencies and problems perhaps affecting the mother-child interaction.

7.4 The Preschool Period

As Chapter Four discussed, the early language DS child appears to show an asynchrony in her acquisition of the various subskills of language that is not found in the nonhandicapped child. Specifically, the DS children in the present study showed deficiencies in their syntactic skills when compared with both

receptive and productive vocabulary abilities (a finding not totally in conflict with many findings in this area, as discussed in Chapter Four, although previous studies have given the finding little weight or importance). That mothers are aware of this difference cannot be denied, if only because one of the major reasons for conducting the study was precisely the parental insistence that DS children understand far more than they can say, even if the intricacies and complexities revealed by the experimental investigation were not necessarily apparent in mothers' assertions.

The question must thus be raised as to whether it is mothers' awareness of and adaptation to their children's differences which foster idiosyncracies in their own interactive style, or whether some aspect of the child, such as her overall delay, or as hypothesised before, increasingly "abnormal" appearance, in confirming maternal stereotypic expectations, fosters a change in her interactive style which then in turn contributes to the child's deficiencies in language learning.

As with the overall Nature-Nurture issue itself such a question is impossible to answer categorically and indeed, the task of answering is made more difficult by the absence of a study bridging the infancy and preschool groups. Nevertheless, the present investigations can perhaps allow it to be ascertained, to some extent, whether specific aspects of maternal speech are associated with a tendency to negative expectations and moreover, whether these are elicited by the child's linguistic deficiencies and are in turn conducive or not to enhanced language development.

It is clear that by the preschool period, the experience of having a DS child leads to a modification of maternal attitudes,

such that whilst during infancy, as discussed above, the DS label seems to evoke similar negative expectancies in mothers of DS babies as it does in mothers of nonhandicapped babies, by the preschool period, whilst this remains true of some of the attitudes examined, in others any such stereotype effect or perceptions seems much diminished, whilst in still others, the effect actually seems to be more negative, such that perceptions are distorted even more radically than is found in naive mothers. One such extreme distortion, as discussed in Chapter Two, appears to be that of the judgement of vocal ability, thus lending support to the hypothesis that as DS children's specific weaknesses become more salient and to some extent confirm the stereotyped negative expectancies held for them, so this exerts a disproportionate effect on mothers' perceptions: it will be recalled that even in infancy, there was a tendency, albeit insignificant, for DS subjects to show fewer complex communicative behaviours compared to their matched controls. The gradual development of this "weakness" may well provide this "confirmatory" evidence. Indeed, whether engendered or not by initial weaknesses in the child "confirming" mothers' preconceptions of their abilities, certainly the preschool years do not appear to bear witness to an overall negation of mothers' stereotyped beliefs. Moreover, as demonstrated in Chapter Three, unlike in the infancy period, it appears that such preconceptions can affect interactive behaviour regardless of the "normal" behaviour displayed by a child. This investigation of the effect of the "DS" label on mothers' interactive behaviour allowed for an examination of whether aspects of maternal directiveness could be linked with mothers' tendency to negative expectancies, and their consequent effect on behaviour,

rather than with specific deficiencies manifest by the child (see Chapter Five).

Given that studies have generally found mothers of DS preschoolers to be more directive in interaction than mothers of nonhandicapped children (see Chapters One and Five), the findings reported here emphasise the need firstly to distinguish clearly between different aspects of maternal directiveness. Whilst the present findings suggest that maternal control or direction of the interaction by the use of interrogatives may well be elicited by the child's specific language deficiencies and may also be certainly unharmed if not indeed conducive to enhanced language progress, direction by the use of imperatives appears not only to be more strongly associated with maternal tendencies to stereotyped behaviour than to the child's language needs, but also it appears at the least to play no role in the active fostering of language development and may further be considered detrimental to such progress. As discussed in Chapter Five, such conclusions must necessarily be tempered by the limitations of the correlation statistic in providing implications of causality. Nevertheless, they can at the least be described as providing a more sound basis, from the ethical point of view, for the investigation of effective intervention strategies, than the "hit or miss" type methodology discussed in Chapter Five. Moreover, these results also suggest the need to investigate more rigorously the various possible effects of maternal directiveness on differing aspects of the DS child's language: given Mahoney's (1976) stipulation that maternal directiveness is uncondusive to the fostering of syntax in children, it is perhaps worth reiterating here that the results in these

studies suggest a link not only between maternal imperative-type directiveness and tendency to stereotyped behaviour but also an association, possibly indicative of a self-fulfilling prophecy, between maternal imperative-type directiveness and less able language development (which included particularly bad syntax abilities) in DS children (see Chapters Four and Five).

Overall therefore through this tangled web of mother-elicited versus child-elicited, detrimental versus helpful language strategies there emerges the following general picture: the child brings to the interactive dyad not only her early generally delayed development, but also later, her specific language problems, particularly in the form of syntactic difficulties. However, these may be exacerbated by maternal tendencies to be directive, and although some of this direction may be both child-elicited and perhaps even conducive to enhanced vocabulary development, some directiveness, particularly the use of imperatives, may not be child-elicited, and may result from mothers' negative attitudes to and expectancies for DS children and the consequent effect of these on behaviour. Moreover these aspects of directiveness may be prognostic of DS children's later, more severe language disorders.

To conclude: research in the area of preschool DS children's communicative development has largely taken one of 2 courses, focusing either on the question of whether DS children and/or their mothers are different from or the same as their nonhandicapped peers, or conversely, focusing on the more applied question, studies have looked at the effects of manipulating aspects of the language environment in an attempt to evolve intervention strategies which would enhance language development. The studies presented here

attempt to bridge the gap between these 2 approaches by examining the various "abnormalities" of the mother-child interactive dyad, tracing their effects and indicating those which may warrant investigation as possible foci for language intervention.

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APPENDIX A

TABLE A.1 to show demographic details, preschool sample

Mother	Mother's Age	Social Class	No. of Children	Age of Preschooler
Group 1, No 1	32	w/class	1	2
Group 2, No 1	33	w/class	1	2
Group 3, No 1	31	w/class	1	2
Group 1, No 2	34	w/class	4	3
Group 2, No 2	30	w/class	4	3
Group 3, No 2	34	w/class	4	3
Group 1, No 3	30	m/class	2	3
Group 2, No 3	33	m/class	2	3
Group 3, No 3	29	m/class	2	3
Group 1, No 4	37	m/class	2	3
Group 2, No 4	34	m/class	2	3
Group 3, No 4	36	m/class	2	3
Group 1, No 5	35	w/class	3	2
Group 2, No 5	36	w/class	3	2
Group 3, No 5	35	w/class	3	2
Group 1, No 6	37	m/class	1	2
Group 2, No 6	36	m/class	1	2
Group 3, No 6	35	m/class	1	2
Group 1, No 7	27	w/class	2	2
Group 2, No 7	25	w/class	2	2
Group 3, No 7	28	w/class	2	2
Group 1, No 8	33	w/class	1	3
Group 2, No 8	32	w/class	1	3
Group 3, No 8	36	w/class	1	3
Group 1, No 9	25	w/class	2	2
Group 2, No 9	30	w/class	2	2
Group 3, No 9	30	w/class	2	2
Group 1, No 10	41	w/class	3	2
Group 2, No 10	37	w/class	3	2
Group 3, No 10	35	w/class	3	2
Group 1, No 11	39	m/class	4	2
Group 2, No 11	32	m/class	4	2
Group 3, No 11	37	m/class	4	2
Group 1, No 12	36	m/class	2	3
Group 2, No 12	32	m/class	2	3
Group 3, No 12	34	m/class	2	3

TABLE A.2: Rating differences between Child 1 (DS) and Child 2 ("normal") for each mother in all three groups, across all rating scales (Chapter Two).

(a) Group 1: mothers of DS preschoolers (labelling condition).

Mother No.	Rating Scales									
	1	2	3	4	5	6	7	8	9	10
1	0	-2	-1	-1	1	1	-1	-1	0	0
2	-2	-3	-1	-1	-2	0	0	-1	0	-2
3	0	-1	0	-1	-1	-1	-2	0	-1	-1
4	-1	-3	0	-1	-1	0	-1	0	0	-1
5	0	-3	1	0	-1	0	1	1	0	0
6	-1	-1	0	0	-1	-1	0	-1	0	-3
7	0	-3	1	1	1	-2	0	0	0	-1
8	-1	-3	-1	0	0	-1	-2	0	-1	-1
9	0	-2	1	0	-1	0	-1	0	0	0
10	3	1	1	2	0	2	2	1	0	0
11	0	-3	-1	1	-1	-1	0	-1	0	0
12	0	0	1	0	2	1	-1	2	2	2

(b) Group 2: mothers of nonhandicapped preschoolers (labelling condition)

Mother No.	Rating Scales									
	1	2	3	4	5	6	7	8	9	10
1	0	-1	-2	-1	0	0	0	-2	0	-2
2	0	0	-1	-1	0	0	0	-1	-1	-1
3	-1	-1	-2	0	-1	-2	0	0	-2	-2
4	-2	-2	-1	-1	-1	0	0	-2	0	-3
5	-1	-1	-2	-3	-3	0	-1	-2	0	-1
6	-4	-2	-2	-2	-2	-2	-1	-1	-1	-1
7	-1	-1	0	-1	0	-1	0	-1	0	-1
8	0	-1	0	-1	0	-1	0	-1	0	-1
9	-1	-1	-1	-1	0	0	0	-1	-1	-1
10	-2	-2	-1	-1	-2	0	-3	1	-2	1
11	-2	-1	-2	-3	-1	1	0	-2	0	-3
12	-2	1	2	1	1	1	2	1	1	-1

(c) group 3: mothers of nonhandicapped preschoolers (no labelling condition)

Mother No.	Rating Scales									
	1	2	3	4	5	6	7	8	9	10
1	1	-1	0	1	0	0	1	1	1	1
2	0	2	0	1	1	1	0	-1	1	0
3	1	-2	0	1	0	1	0	-1	0	0
4	0	-1	0	0	0	0	-1	0	1	0
5	0	0	0	0	0	0	0	0	0	-1
6	1	-1	0	0	1	3	0	0	0	0
7	2	-2	0	2	2	3	0	1	0	2
8	2	0	2	2	1	2	1	1	0	1
9	2	1	1	2	3	2	1	2	0	1
10	2	-2	1	4	2	3	0	0	2	2
11	1	0	0	1	0	1	1	1	0	1
12	-1	-2	2	3	1	2	1	0	2	0

TABLE A.3: data for Chapter Three, vocalisation offering toys and unresponsiveness categories.

Vocalisation				Offering Toys				Unresponsiveness			
Early Period				Late Period				Early Period			
DS*	N*	DS	N	DS	N	DS	N	DS	N	DS	N
10	22	17	15	2	2	0	2	50	0	25	20
47	52	37	48	2	1	0	1	50	0	67	43
10	15	12	20	0	1	0	2	0	50	56	0
33	30	17	35	1	2	1	4	50	0	20	17
21	21	15	25	2	0	1	2	0	0	29	0
18	26	14	20	3	2	1	0	67	0	0	29
19	37	13	30	1	2	0	1	0	0	25	38
14	19	8	18	0	2	2	3	50	38	50	25
18	16	11	16	1	1	2	2	0	33	50	25
20	23	18	24	1	0	0	0	0	14	33	18
28	26	15	22	1	0	3	1	0	50	17	0

*DS = DS-labelled child
N = normal-labelled child

TABLE A.4: data for Chapter Three, positive commands, simple questions and complex questions categories.

Positive Commands				Simple Questions				Complex Questions			
Early Period		Late Period		Early Period		Late Period		Early Period		Late Period	
DS	N	DS	N	DS	N	DS	N	DS	N	DS	N
11	5	7	3	27	10	29	11	0	18	7	14
4	1	3	5	7	8	6	4	2	17	5	8
0	4	6	4	27	29	10	17	11	25	2	14
5	2	3	2	22	13	11	10	14	9	11	12
3	3	5	0	19	13	16	11	3	13	3	3
0	0	0	5	10	11	21	11	0	17	20	21
15	11	14	5	3	8	0	0.8	3	11	4	2
8	9	15	7	20	18	34	8	4	3	3	9
0	10	4	6	27	17	13	21	6	10	13	6
6	0	6	7	14	7	7	8	6	10	11	6
4	7	11	5	30	9	40	12	18	33	19	23

DS = DS-labelled child
N = normal-labelled child